Malcolm Braff's Approach to Rhythm for Improvisation:

Definition, Analysis and Aesthetic

Daniel Jacobus Steyn de Wet

A dissertation submitted to the faculty of humanities, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of MMUS. Johannesburg 2017

Plagiarism Declaration

1. I know that plagiarism is wrong. Plagiarism is to use another's work and to pretend that it is one's own.
2. I have used the author date convention for citation and referencing. Each significant contribution to, and quotation in, this thesis from the work or works of other people has been acknowledged through citation and reference.
3. The essay is my own work.
4. I have not allowed and will not allow anyone to copy my work with the intention of passing it off as his or her own work.

_____ _____

Signature Date

Human Research Ethics Clearance (non-medical) Certificate Number:

Acknowledgements

I would like to thank my friends and family for the support they have shown through this time. I further thank the various supervisors and co-supervisors who have at some point had some level of input into this study. On the practical side of my study I thank Malcolm Ney for the high level of classical training that I have received. I thank Andre Petersen for his input into the jazz specific aspects of my performance training. Special thanks to Dr. Carlo Mombelli for the training I received in his ensembles and at his home with regard to beautiful and improvised music. Thanks also go to the supervisors for the majority of my proposal phase Dr. Susan Harrop-Allan and Jonathan Crossley. I especially thank Dr. Donato Somma for supervising the main body of work, and his exceptional dedication, support and professionalism throughout the whole process. This project would not be what it is without him. For the financial support and opportunity to travel to Switzerland in connection with this study I thank ProHelvetia.

Lastly, I thank Malcolm Braff, the main inspiration for this study. I don't think he fully realizes how deeply and profoundly different my life has become since meeting him, and how eternally grateful I am for all of it. I am sure that I am not alone in this feeling.

Dedicated to my mother and my cousin who both died during the course of this study.

Table of Contents

Introduction

Motivations

When I initially had the idea to do a study of this nature, I had already been introduced to Braff and his rhythmic concepts. My initial acquaintance occurred in the small city of Grahamstown, South Africa, during the annual National Arts Festival. I attended the jazz festival (part of the larger festival), that brings local jazz students and jazz musicians from across the globe together. Some of these musicians are world famous, and some are relatively unknown; however, the festival is unique in that all students and musicians have access to one another almost continuously. Needless to say, much information is exchanged, much experience is gained and amazing music frequently occurs.

I distinctly recall walking past the music block on the school campus where the festival occurs. I heard a piano being rather noisily played in a repetitive manner that I could not understand and did not particularly like at the time. I have since realised that this was not because of the playing, but rather because of my undeveloped sensibilities. The pianist was Malcolm Braff, and he was working on one of his ostinato based compositions. As the festival progressed I met Braff, watched him in a number of unforgettable performances, attended every workshop of his possible, made a real connection with him and developed a deep respect for him and his music, pretty much in that order. As an educator himself, he was, and is, eager to share his concepts with anyone showing an interest. Being a conceptually inclined performer and improviser myself, it was natural that I would be drawn to Braff and his concepts. My initial experiences of him and his concepts quickly made me aware of just how much I did not understand about rhythm and how many possibilities I was missing from my playing.

At the time I was very aware of the numerous weaknesses in my own playing and had a deep desire to find ways to solve the problems I faced. The greatest of these

weaknesses, I felt, was my rhythmic ability. Meeting Braff felt like a possible solution to those problems. His approached struck me as a way of understanding and mastering both the fundamental rhythmic concepts and skills I lacked at the time, as well as an approach to advanced rhythmic concepts I hoped to explore. There was the added bonus that I found, and still find, exploring this aspect of music fascinating and exciting.

However, Braff being a resident of Switzerland posed certain logistical problems with regards to studying his approach. For about a year I attempted to decipher and understand the copious notes I had made in order to begin assimilating his rhythmic approach alone. I failed, but remained determined to succeed. That was when I first thought about finding a way to study his approach formally. Therefore, my first motivation for studying Braff's approach was to improve my own rhythmic abilities, hopefully aiding in my journey towards becoming a successful and interesting performer.

Being a music teacher, I noticed that many of the problems I faced rhythmically are the same problems that my students, and even some of the more advanced musicians in my environment, had. If Braff's rhythmic approach really provided the solutions to the rhythmic problems I faced, as it seemed to, perhaps it could help other musicians beyond myself, especially my students. This was my second motivation for pursuing this study.

Since I was driven to be both a performer and a better educator, I knew I would not only have to become proficient at Braff's approach, but would have to understand it in order to pass on the knowledge and experience gained. I decided that a study that incorporated both aspects, namely a performance component and a theoretical component, would be best.

The performance component had its challenges because of the physical distance between Braff and myself. I knew having personal lessons would be tricky. I attempted to overcome this with Skype lessons, but these never materialised. I was, however, fortunate enough to spend another week following Braff around for a

second time at the same festival two years later (2013). At this stage I had already begun my study, and he was very happy to share information and have me follow him around. He extended an invitation for me to visit him in Switzerland for a longer period to further study his approach. I finally managed, thanks to the funding and help from Pro Helvetia, to do so at the beginning of 2015. I lived with Braff, and was practically his shadow, for a month and absorbed everything I could. This was the majority of my practical training with him on his rhythmic approach, besides for the occasional Skype session thereafter.

I realised that I needed a deeper understanding of what was cognitively occurring within myself while engaging with rhythmic material in order to more fully grasp Braff's concepts, and test their validity for purposes beyond my own performance use, like teaching. This was initially my main motivation behind the theoretical component of the study.

Of course, as was made obvious to me by my supervisors, Braff is not an isolated human being who came to his realisations and rhythmic approach without influence. It quickly became apparent that I would need to understand Braff more holistically in order to form an honest and useful opinion and understanding of his work. This I decided, with much guidance, could be done through understanding his background, musically and otherwise.

If Braff's rhythmic approach and thinking was to be truly useful to anyone other than himself, it would need to stand up to extensive scrutiny. I decided that the best approach would be to compare his rhythmic approach, the way he speaks about his concepts, and the actual musical results, with what is currently being written and theorised about rhythm. I will be using "analysis as an aid to perception: analysis sharpens the listener's ear, enhances perception and, deepens appreciation" (Agawu, 2004, p. 270).

Overall, this study aims to achieve the following:

- To locate Braff as a product of his environment both as a person and as a musician. It is hoped that, through this location process, a deeper understanding can be gained of philosophies, theories, music, and the origins of his rhythmic approach.
- To document the various aspects of Braff's rhythmic approach as clearly as possible, thereby describing the approach.
- To analyse and interrogate the various aspects of Braff's rhythmic approach in order to determine the validity of, and usefulness of, such an approach.
- For me to attempt to assimilate aspects of Braff's rhythmic approach and reproduce these in a performance.

Methodology

While in Switzerland, I conducted two extensive interviews with Braff, the first lasting four hours and the second lasting six hours. The first interview was aimed at gaining information about Braff's rhythmic approach. The second interview was aimed at gaining insight into his life, history, philosophies and background, both generally and musically. These interviews, along with the training I received in the rhythmic approach at the time, served as my main source of primary data in this study.

I used this data in conjunction with multiple secondary sources, including books, online articles, and studies, usually in journal articles, to locate Braff as a product of his environment. I researched the various musicians he mentioned he has worked with, and those found on his recordings. I investigated his mentors. I researched the multiple genres and styles of music that he is a product of. I looked into the various philosophies and ways of thinking that he mentions and that seem to have played a prominent role in his development. Combined, these investigations served to create a clear, general picture of Braff and his music, as a means to understand the context that spawned his rhythmic approach, and the context that allows it to function.

Being that Braff is primarily a Western musician, his rhythmic approach could be interrogated from a Western perspective. I needed a clear framework that could

consider Braff's rhythmic approach in terms of Western concepts of rhythm. To this end I used Gordon's work, specifically his book *Rhythm* (2009), which contains extensive descriptions of Western rhythmic conventions and concepts, from the most mundane to the most sophisticated. Gordon is today recognised as one of the major musical education theorists and researchers.

Gordon touches on aspects of rhythmic cognitive processing in his work, based on his own theories and research, particularly regarding his work with children. However, I found that this work was not extensive enough to describe the work of Braff. Therefore, I researched rhythmic cognition through many secondary sources on this topic. Eventually I came across the work of London (Hearing In Time: Psychological Aspects of Musical Meter, 2012), a book in which he had analysed the work of most of the theorists and studies I had, and many others I had not. Through his research, London is able to clearly discuss the way we perceive metric structures and rhythm in music, utilising the most recent studies as a means to do so.

One additional layer added to the framework was the work of Iyer (Embodied Mind, Situated Cognition and Expressive Microtiming in African-American Music, 2002) (Exploding the Narrative in Jazz Improvisation, 2004). I found Iyer's work, although not nearly as extensive as the other two central theorists, particularly useful in adding a well-researched performer's perspective on the theoretical and practical rhythmic aspects addressed in this study.

In this study I combined the work of London and Gordon to form a framework for interrogating Braff's rhythmic approach. I have used this framework to:

- Analyse Braff's descriptions of his rhythmic approach.
- Analyse Braff's theories where possible.
- Analyse the musical results of Braff's rhythmic approach in his recordings.
- Determine the validity and applicability of Braff's rhythmic approach both cognitively and practically. The cognitive limitations discussed were particularly useful here.

In order to apply the theoretical framework to the recordings, I used various transcription methods for Braff's recordings. I decided to focus mainly on his most recent recordings, namely those found on his album *Inside* (2011) and the recording from one of his most recent projects, *Greenwoman*, "Goodmorning Sincity." I did most of the transcription process directly onto the sound files on my computer, and at the piano. On the sound files, I placed text descriptions of what was occurring rhythmically, since the amount of material transcribed is too extensive and involved to accurately display with traditional notation. After the transcriptions were complete, they were subjected to scrutiny by one of my supervisors, Carlo Mombelli, who has performed some of Braff's compositions with him and is somewhat familiar with the concepts. I have, however, provided some notated examples of Braff's compositions/performances that include his rhythmic approach where possible.

In the practical component of this study I performed three of the analysed compositions from *Inside*. To do so I have spent a large amount of time practicing Braff's rhythmic approach as applied in these compositions. I additionally took three jazz standards, which I felt lent themselves to such treatment, and used Braff's rhythmic approach and concepts as a means of arranging them. In these arrangements I strove to use Braffian concepts that were not present in the three *Inside* compositions, but were present in some of his other recordings, especially "Goodmorning Sincity." I performed these arrangements as part of the same concert.

Through learning and applying Braff's approach I hoped to gain a deeper understanding of the approach. This added dimension to my perspective on Braff would, theoretically, aid in my analysis of the data, concepts, theories, etc., being examined in this study. I hoped that using myself as a guinea pig may further aid others that wish to follow in Braff's footsteps. I further hoped to see where the shortfalls of the Braffian approach may be through personal experience. Naturally, all of the experience gained would aid my own artistic and musical growth.

Special Considerations

The rhythmic concepts dealt with in this study span from beginner music rhythmic concepts to rhythmic concepts far beyond those dealt with in any university course in this country (South Africa), and probably most universities worldwide. Most musicians that I have spoken to about rhythmic concepts since the beginning of this study, including educators and performers across the board, both locally and internationally, do not engage with rhythm at this level. As such, the material dealt with in this study requires special care if the content is to be clearly communicated while remaining as accurate as possible.

One key central finding in this study describes a Braffian approach to performing 'swung' subdivisions, including jazz eighth-notes, Brazilian 16ths or Onawan triplets. Braff's specificity about the process extends the concept into subdivisions not previously conceptualized in such a manner. The implications and vast applications to this Braffian processing are discussed at length, and I have termed these kinds of processes as 'metric-bridges.' In addition to being central to Braff's rhythmic approach, these metric-bridges came about as a result of his spiritual motivations and are an expression thereof. The study is laid out to prepare the reader for this concept before later addressing it directly, since it is an advanced rhythmic concept that can be difficult to understand initially.

Where possible I have simplified the use of technical language from the studies used, especially regarding the numerous formulas, acronyms and other field specific terminology. However, some technical language has remained because the language is both specific to the concepts and widely used in this field and other related fields. I found that any further simplification of these terms became either cumbersome or too vague to describe Braff's processes.

Gordon's language and specific terms for labelling rhythmic components is comprehensive, but at times can be seen as excessive with regard to this study. However, the precision of Gordon's language made it simpler to accurately describe what occurs in Braff's music, as well as comprehensively address differences

between Braff's approach and more known approaches regarding rhythm. Gordon's own definitions of his terms are extensive. I have shortened these where possible and included only those definitions that are pertinent to this study. In addition, I have kept the language restricted to specific sections where possible.

The written component of this study is in a type of funnel form, beginning with more general background and musical investigations into Braff, dealt with mostly in the first chapter. It then leads into general rhythmic concepts, with rhythmic concepts gradually becoming more specific as the study progresses through the remaining chapters. In addition, the concepts dealt with become gradually more advanced and challenging to understand as the study proceeds. This is especially true of the rhythmic material dealt with. To cope with this difficulty I have endeavoured to ensure that each chapter forms the foundation for understanding the information in the following chapters.

I have further included a summary at the end of each chapter. This is to ensure that the reader feels they have understood the information presented in each chapter since the crucial foundational points are recapped. I additionally hope that the summaries serve as a useful tool, should the reader need to quickly refer back to a previous concept or vital piece of information previously covered.

Finally, the data in the appendix has been arranged specifically into folders for simple and easy use. Braff's specific tracks, discussed in this study, have been included in their albums in one folder with his permission. The two recordings focused on in this study, "Mantra" and "Goodmorning Sincity," each have their own folder. The folders include an audio file, relevant sheet music (a transcription of the first 64 measures of "Mantra" and a lead sheet of "Goodmorning Sincity"), a text file and a *Transcribe!* file. The text files are the time stamped transcribed analysis of the recordings, and the *Transcribe!* files are a combination of the text files with a visual representation of the audio waves. The programme will be needed to open these files. An additional folder with the transcriptions of the two interviews and their corresponding audio files has been included.

Chapter 1

Background: The Wandering Minstrel

Malcolm Persson Braff was born in Brazil on June 10th 1970. He was the eldest of three siblings, including a younger sister and then a brother. His father was a Seventh-day Adventist preacher and his mother was an academic, specialising in Brazilian Portuguese literature (Interview 2: 30s). This study will investigate Braff as a musician. Music was not his first career choice. Initially he chose to follow in his parents' footsteps, pursuing academic studies of theology with ancient Hebrew, philosophy and musicology as subjects in Geneva at a tertiary level, hoping to become a preacher. During this two-year period, he attempted to juggle his developing music career with his academics, ultimately deciding to focus on music (Interview 2: 1m45s; 16m45s; 19m15s).

I find it difficult to think of Braff only as a musician, isolating one layer from many layers of a multifaceted human being. In the man that I have gotten to know, revealed in this study, the layers of personality, philosophy, spirituality, knowledge and skills, or in other words all layers of being, are always present and interacting, regardless of his endeavours or situations. The man I met is a board game designer, a philosopher, a spiritual thinker and doer, a computer programmer, a music software and technology specialist, a theorist (in many different areas), a family man and a teacher. As expected, Braff's approach to living has its roots in the household and church environment that he grew up in. However, aspects of his philosophies have undergone many changes over time. This study will show, through numerous discussions and examples, that Braff's musical approach cannot be clearly segregated from his wants and desires outside of music, his philosophies, his spirituality and his logical thinking.

Braff's first two years were spent in the Cape Verde Islands. Thereafter, he and his family moved to mainland Africa, namely Dakar, where Braff received his initial

formal education, musical and otherwise. The family remained in Senegal until Braff was approximately 12, at which point they moved briefly to France for about a year, and then finally to Geneva. Braff has been based in Switzerland ever since, though has frequently travelled abroad; mainly to Brazil, parts of Africa and India at various times (Interview 2: 30s). According to Braff, the frequency of relocation throughout his childhood has left him without a strong sense of culture regarding any particular nationality or sect thereof. As a Brazilian in Africa, Braff always felt like an outsider, somewhat alienated from the locals. By the time his family settled in Europe a significant part of his Brazilian identity had been formed in Africa making him again different from the locals.

Musically, however, Braff feels that he is very strongly a Westerner, subconsciously understanding and reacting to the deeper meanings within the music and greater culture. For example, Braff finds a particular Western African burial rhythm happy because of his cultural grounding (Interview 2: 1h41m50s); He finds that harmonies have meanings where sometimes, "minor means sad and major will be martial."(Interview 2: 1h41m6s). Even physical gestures and body postures have meanings rooted in Western culture (Interview 2: 1h40m50s). His concept of 'Western' appears to include cultural and societal norms and thoughts, commonly associated with Europe and America. He believes that his nomadic perception of himself has made him disloyal to any culture, particularly musically. He does not attempt, musically, to loyally adhere to the rules and traditions of any culture and feels free to interpret what he hears in any way that seems correct to him. He musically and philosophically utilises only what he finds interesting and relevant: "it's really satisfactory enough to consider that I will understand something my way, and this understanding doesn't need to have any similarity with the truth of that thing I'm considering" (Interview 2: 2h48m54s).

Braff's strong 'Western' musical sensibilities can be attributed to his musical exposure during early childhood and throughout his life. He recalls music as constantly present in his life through his extensive early involvement in the church

environment, his musically inclined family, and the environments that he later chose to engage with.

The church environment into which Braff was born was musically rich and formative, surrounding him daily with singing, and first exposing him to the piano and some of its uses. Many of the musical elements he learned through the church are still present in his music today, investigated in depth below. Similarly, Western classical music was very present in his early musical development particularly through records listened to at home, and early training at the piano, shaping him in ways that church music did not. Many Western classical elements have remained in his musical thought and approach throughout his career. These two musical genres laid a foundation that developed and changed significantly through his later exposure to other musical styles and genres.

The musical genres that specifically influenced Braff, investigated in this study, include church music of the traditional Seventh-day Adventists (hymns and Afro-American spirituals); Western classical music, including all the major canonical composers; progressive rock of the late 1960's and 1970's; popular music mainly from the 1980's; jazz; freely improvised music and certain elements from traditional West African music as related by Braff.

Improvisation: It's About Swimming

Improvisation is central to Braff's musical process and is present in almost all of his musical work. He started developing the skills to improvise because he was responsible for, at a young age, creating introductions and endings for hymns and accompaniments for parts of his father's sermons. He never had specific training in accompaniment, creating these introductions or endings, or improvising; though he does recall observing and copying other musicians from various church services that he attended (Interview 2: 25min). Improvisation in a church setting was merely the first of a variety of improvisation methods that Braff has thus far been versed in, investigated in this section. Improvisation, of some kind or other, seems to have always been present in his musical exploration; therefore, I have chosen to start with

improvisation in order to deepen our understanding of his musical background and self.

Afro-American gospel had, by the early 1970's, become somewhat of a global phenomenon, infiltrating most popular Christian denominations including the Catholic church, and spreading through the media, mostly via television (Boyer, 1979, p. 5). Seventh-day Adventist churches typically include many Afro-American gospel hymns and spirituals in their church repertoire. The church that Braff grew up in was no exception. The 1985 *Seventh-day Adventist Hymnal* was the first official, published Seventh-day Adventist hymnal that included music from multiple cultures, and contained a substantial number of Afro-American spirituals (Mack, 2011, pp. 9, 10). The spread of African-American Gospel not only influenced Christian music, it also, "…nourishe[d] and enriche[d] the mainstream of the world's cultural sources" at that time (Williams-Jones, 1975, p. 373). Braff recalls how he was further exposed to this music outside of his father's church through other church services (Interview 2: 26m).

Williams-Jones and Boyer list improvisation as a key element in Afro-American gospel (Williams-Jones, 1975, p. 378). Boyer lists improvisation as one of four main elements in Afro-American gospel, especially regarding the approach to singing, that help to define the music (1979, p. 23). Melodic variation, embellishment and improvisation are important features of the African-American gospel tradition, usually incorporating rhythmic variation and rhythmic improvisation of some sort (Boyer, 1979, pp. 25-28).

Braff's earliest musical memories are of singing in the family, often in multiple voices with the other family members. He recalls, "in family we were singing very, very early, so even before I started piano - three, four years old - already we were singing in family, and I was singing multiple voices" (Interview 2: 11m41s). He and his family would sing in harmony with one another in up to four parts. As can be expected, the majority of the melodic and harmonic material that Braff was exposed to as a young child came from hymns and gospel music, found commonly in protestant churches in

the 1970's. Braff's father sang gospel music and his family was extensively involved with his father's church and church activities (Interview 2: 1m45s). Much of the Seventh-day Adventist music included in the hymnals was sourced from other denominations within the Christian church (Mack, 2011, p. 8).

The melodies commonly written for hymns are typically constructed from major and minor scales as are the harmonies. Inherent in these scales is the sense of tension and resolution with the tonic being the most resolved and the other notes having varying degrees of tension in relation to the tonic. Braff recalls, "As far as I remember I had this ability to improvise a second voice fitting the harmony, so getting this sense of the harmony" (Interview 2: 12m02s). By doing so he shows that as a young child he already had an aural assimilation, to some extent, of the rules that govern Western harmony, and an aural understanding of the relationship between melody and harmony. Therefore, Braff had aurally started forming one of the first major foundations of Western improvisation in harmonic contexts.

Common Afro-American gospel musical elements include a specific style of embellishment; timbral alteration, typically by the singers, and increased energetic levels connected to emotional expression. The singers of Afro-American gospel portray and deepen the meanings of "texts of the Trinity" describing "blessings, sorrows, woes and lamentations" (Boyer, 1979, p. 22) through "antiphonal response", "varying vocal tone", "endless variation on the part of the lead singer", "use of falsetto", "religious shouting", "repetition" and a "dramatic concept of the music" (Williams-Jones, 1975, p. 378). The use of these techniques, combined with communal participation, builds the emotional energy to high levels, allowing participants to "get happy" or "feel the spirit" (Ibid. p. 383). The approaches to embellishment described here are essentially improvisational techniques; techniques that Braff became familiar with, evident in some of his recorded music as demonstrated below.

Over time, Braff became primarily a pianist, and, similarly to Afro-American gospel singers, needed a way to tonally and timbrally alter his sound at the piano to further

increase his expressive range. Arguably, his classical training gave him the skill to do so. Thanks to Liliane Carlier, he became subconsciously, dynamically proficient and timbrally aware, able to manipulate the piano to harness a vast range of tonal colours (Interview 2: 9m40s). According to Neuhaus, tone, technique and dynamics are closely related. Tone is determined by the dynamic level the sound is produced at, and the quality of the technique producing that dynamic, combined with the level of artistic musicianship of the musician, tying it all together (1973, pp. 67,68). The influence of Braff's classical training is explored in more depth later.

According to Braff, he has always enjoyed experimenting musically by improvising at the piano (Interview 2: 25m20s). By doing so he learned to understand new musical concepts and sounds experientially and in his own way. Due to his eagerness and interest in music, any new musical device he was exposed to was naturally explored during his improvisations. Seemingly, this has been the primary path his musical development has followed.

Braff's first conception of improvisation was free, believing improvisation always allowed the musicians to play whichever notes, rhythms, harmonies and forms they wanted, as long as it sounded good to them, initially thinking other improvising musicians, like jazz musicians, improvised this way, allowing for free interplay between the musicians. By adolescence he was able to apply his partially developed improvisational skill in public at a local café, thus demonstrating that he had sufficiently gained musical information and skill for effective solo improvisations (Interview 2: 27m26s). By his early twenties he was locally established as an improviser. These years were formative for him in multiple fields of improvisation new to him at the time. He has continued developing himself as an improviser, building upon this foundation in improvisation, ultimately becoming an influential improviser himself. The path he followed to achieve this is outlined below.

Musical interplay between musicians in jazz was the reason Braff first chose to explore jazz. This came about due to his encounter with the Australian hardbop band

The Wizards of Oz (Interview 2: 29m31s).[1] Soon after watching them perform at a festival, Braff started his first jazz piano trio and decided to pursue formal jazz piano training. He took a couple of private lessons and later attempted formal study at the Lausanne university's jazz school. Neither pursuit was successful because, at the time, Braff was most interested in exploring improvisation and not jazz rules.[2]

Braff did learn jazz though. True to his nature, he learned experientially through engaging with the music at jam sessions, gigs and through interactions with other musicians in the scene. Learning jazz this way is not uncommon, according to Berliner in his book *Thinking in Jazz* (1994, pp. 41-51). Despite his initial resistance to the rules of improvisation associated with jazz, Braff mastered enough jazz repertoire and language to quickly become known as one of the prominent hardbop pianists in the Swiss scene. By 23 he performed as a hardbop pianist at some of the bigger festivals, including the Montreux Jazz festival in Switzerland (1993) (Interview 2: 1h54m54s).

During these same years, Braff deeply explored freely improvised music, creating his own bands, scores, and improvisational settings under the mentorship of some well-known local expert artists. He lists some of his main mentors in freely improvised music as: singer Pascal Auberson, pianist Francois Lindemann, and the members of the well-known Swiss free band the BBFC: Olivier Clerc, Jean-François Bovard, Daniel

---

1 The Wizards of Oz were formed by pianist Paul Grabowsky in 1987 and included saxophonist Dale Barlow, bassist Lloyd Swanton and drummer Tony Buck. The performance Braff saw took place in Montreux, Switzerland, during the jazz festival there, but not as part of the main stage performances. This concert was most likely part of the world tour that the band was involved in around the same time. Grabowsky, P. (2014). Retrieved 10 5, 2015 from Wordpress, Woothemes, Extempore: http://www.paulgrabowsky.com.au/recordings/soundtrack/.

2 Braff was in his final year of high school when he saw the Wizards of Oz performance. Around the same time, he privately took two jazz piano lessons on the recommendation of close friend Sylvie Courvoisier, but chose not to continue with that teacher because he disagreed with his teaching style. He started the jazz degree shortly after ending his academic studies but had stopped six months later, after being asked to leave and finding the course unsatisfying (Interview 2: 39min30sec).

Bourquin and leader Leon Francioli.[3] Through these mentors, Braff was exposed to the recordings of improvisations by Anthony Braxton, Keith Jarrett, John Zorn and Pat Metheny, as well as being mentored in the concepts of, and philosophy behind, creating freely improvised music. Braff recalls that these mentors were themselves mentored and influenced by prominent musicians like Californian born Barre Phillips who has been at the forefront of successive revolutions in improvised music (Interview 2: 45m-52m53s).[4]

The majority of Braff's rhythmic concepts (the main focus of this study) that deviate from more standard Western rhythmic concepts have their origins in ideas he first encountered in his mid-twenties. At this time he worked closely with Farafina. Farafina is a cross-cultural African band that started in the early 80's and, despite changes to personnel, continues today (Retrieved 08 6, 2016 from www.farafina.com/en). Braff collaborated with the Farafina musicians creating a twelve-piece band that was first created, and had its first performances, in 1995. The band consisted of seven Farafina musicians playing traditional African instruments like djembes, balafons, koras, flutes and so forth. The other members came from a jazz quintet format that consisted of a jazz drummer on drum kit, an upright bassist, a trumpeter, a pianist, and a violinist from Algeria. This band was reasonably successful, touring and playing festivals throughout Europe.

The project continued until 1997 when conflict with Farafina management forced the project to end. Braff reformed the project later that year as a sextet and shortly after again to a quintet. The format of the quintet included piano, upright bass, drum kit, trumpet and percussion. In 1998, after some touring, the band recorded a couple

---

3 The musicians described here were primarily part of the British and European freely improvised music scene, influential for Braff. For a description of the closely related American Free Jazz scene at the time please refer to the *New Grove Dictionary of Jazz, Vol 1,* pg. 827 (2002)

4 Phillips has worked closely with Ornette Coleman, Archie Shepp and Jimmy Guiffre. He has recorded a number of albums for ECM both solo and recordings with other prominent artists such as Evan Parker and Paul Bley Paul Bley, E. P. (Performer). (1995). On *Time Will Tell* [CD]. ECM. ECM. (n.d.). *Advanced Search: Barre Phillips*. (ECM) Retrieved 02 26, 2016 from https://www.ecmrecords.com/search-advanced/Barre%20Phillips

of demo tracks that ultimately secured a recording deal with Blue Note Records. Braff recorded two albums with this record label and band, namely *Together*, recorded in Oslo in 1999, and *The Preacher* recorded in 2001. Shortly after the second recording the band split up. The influences on Braff's music because of his interactions with the African musicians are clear in these two albums, especially on tracks like "Nakan," "Djougou Ya" (Braff M. , Together, 1999), "Yele" and "Deli Magni" (Braff M. , The Preacher, 2000) to name a few. Elements that are found prominently in Braff's later recordings are already present in these recordings. Some of these elements include: ostinato left hand patterns over which he improvises, rhythmic displacement, exploration of triplet based meters, and altering rhythmic divisions within a meter, all examined in depth in the following chapters.

Braff's recordings after the Blue Note recordings usually feature smaller bands, generally in a jazz trio format. Braff more fully developed his rhythmic concepts during this time. These concepts became more prominent in his improvisations, especially evident in the later albums like *Voltage* (2010) and, in particular, *Inside* (2011). Besides being rhythmically far more complex than his earlier recordings, Braff's improvisations on these albums are extensive, clearly demonstrating that improvisation is primarily the focal point of most tracks.

It becomes clear why improvisation is central to his music when considering Braff's current philosophy of improvisation:

> Improvisation means that what you feel, experience, are about now, has the strongest influence on what you're playing. And that you're not only allowing it, but using it as an energy input, so that you're not trying to restrain, or constrain that influence of the 'now' into the performance. But even on the contrary end, you're actually using it (Interview 1: 2h46m).

Braff's definition of improvisation is broad enough to include all kinds of musical and even non-musical forms of improvisation. It could be seen as a philosophy to live by; a philosophy I believe Braff lives by. He considers Martha Argerich, the Western classical pianist, a great improviser because of how she freely portrays the moment

she is in with her approach to standard Western classical repertoire, a prime example of Braff's philosophy around improvisation (Interview 1: 2h45m55s).

According to Braff, music is a vessel for experiencing life and himself in various and interesting situations. Regardless of whether those experiences and situations are regarded as good or bad, "it's about swimming" (Interview 2: 93m25s). Improvisation is his preferred path to finding himself in musical situations that require 'swimming'. He regards improvisation as an organic process representative of life itself. Additionally, without some sort of vessel to channel itself through, life cannot exist (Interview 2: 1h35m7s). Overall, music becomes meaningless for him when only viewed as an abstract concept.[5] [6] "Music has a meaning only while it's relating, feeding and being fed by life as a living process" (Interview 2: 5h9m55s). Improvisation as a living process, then, also requires a format or framework to act through. For Braff, the format itself does not matter; as long as there is a structure, improvisation can take place (Interview 2: 1h35m39s). Braff's improvisational frameworks are closely examined below in the **Form as a Conduit** section.

Improvisation: "But is it jazz?"

In this section we will see how Braff's approach to improvisation is influenced by jazz concepts and can be viewed as a development of jazz improvisation. His music incorporates concepts commonly associated with freely improvised music, more commonly called 'free jazz' or 'free improvisation,' often viewed as an extension of jazz, as well. The level of improvisation largely determines the quality and success of a jazz performance. For example, in *A New History of Jazz*, Shipton says of Earl Hines and Louis Armstrong regarding their solo together on "Weather Bird": "It shows an instinctive mutual understanding of the direction in which they were both taking jazz – where imaginative solo improvisation would be the yardstick of a successful performance" (2002, p. 143). This sentiment has remained in jazz where imaginative

5 However, abstract concepts do interest him as a mental exercise.

6 Braff also includes philosophy, spirituality and art in the definition of living processes that become meaningless for him when they are only abstract concepts.

improvisation is certainly desirable. Braff has extended his traditional jazz improvisational skill through his rhythmic approach, in a manner not seen commonly in other improvisers in this tradition. It is his rhythmic approach, the main focus of this study, which separates his improvisations from the norm, allowing him to shape imaginative improvisations.

Jazz harmony is strongly linked to jazz scales, as Levine puts it, “The scale and the chord are, for the most part, two forms of the same thing” (1989, p. 60). Jazz finds the majority of its harmony from four basic scale types: major, melodic minor, diminished and whole tone (Levine, 1989, pp. 59-84). Jazz scalar and harmonic knowledge was, for Braff, an extension of his classical knowledge. In his more recent recordings (Voltage (2010), Inside (2011) and later) he has generally moved away from harmonically complex music, favouring music that is tonally more modal. However, many other various jazz harmonic concepts are heard in his prior recordings, especially the Blue Note recordings. Some jazz harmony is evident in the transcription of “Tied to Tide” (Braff M. , Inside, 2011), discussed below.

In my discussions around music with Braff, he described harmony following the most commonly used jazz conventions. For example, he often named the chords and symbols by roman numerals to describe the chord according to their functional relation to the key; or with capital letters of the Latin alphabet describing the root and/or bass note of the chord/s commonly used in the jazz and Western popular music traditions. ‘Tensions’ are described as additions to the basic chords using Arabic numbers’ naming tensions, “…in terms of their numerical positions in a stack of thirds build up from the chord’s root, either diatonically (in the key) or with the chromatic alterations” (Berliner, Thinking in Jazz, 1994, p. 74). Braff mentioned extended concepts of harmony such as tritone substitution, voicing in fourths, upper-structure chords, block chords, and many common ways of voicing chords that are typically associated with different jazz periods (Interview 2: 4h40m-

4h45m).[7] In my practical training with him, his manner of demonstration illustrated a practical proficiency with these same concepts naturally limited within normal restrictions of a lesson setting.

Braff as free improviser says, "The idea is that you can create your own rules" (Interview 2: 43m25s). This approach to free improvisation is shared by Bailey who comments on the lack of adequate definition of this music since the music can encompass all things musical (1980, p. 83). Braff and Bailey share the sentiment about freely improvised music being open to the musicians creating the rules most likely because their opinions about freely improvised music were formed from a very similar time frame and circumstance, and are not necessarily the views held today:

> Opinions about free music are plentiful and differ widely. They range from the view that free playing is the simplest thing in the world requiring no explanation, to the view that it is complicated beyond discussion. There are those for whom it is an activity requiring no instrumental skill, no musical ability and no musical knowledge or experience of any kind, and others who believe it can only be reached by employing a highly sophisticated, personal technique of virtuosic dimensions. Some are attracted to it by its possibilities for musical togetherness, others by its possibilities for individual expression. There is, as far as I know, no general view to be given (Bailey, 1980, p. 85).

Bailey makes a clear distinction between music that is experimental or avant-garde and freely improvised music saying that the latter is not generally concerned with pursuing new frontiers of music making, rather, it is concerned with improvising freely (1980, p. 83). From Bailey's perspective, Braff can be considered experimental since he rhythmically investigates new frontiers, discussed at length in the following chapters of this study. His rhythmic experimentation has extended into experimenting with both software and hardware sound manipulation through

---

[7] For a more complete description of these jazz harmony concepts of jazz harmony see Levine, M. (1989). *The Jazz Piano Book.* Petaluma: Sher Music Co., chapters 6, 8, 12-14, 16, 17 and 19.

analogue pedals and devices, and computer programmes. Besides for utilising these technologies according to their original design purposes, he alters their parameters to cause specific rhythmically significant sound manipulations that mimic his rhythmic approach as well. He uses these technological enhancements for live sound processing that enhances his improvisations and/or the sound of the musicians of the band.

Bill Evans' definition of jazz incorporates all the musical extensions discussed in this section, embodying Braff's attitude when creating his music, music that clearly extends beyond what is traditionally considered as jazz:

> Jazz is not a what, it is a how. If it were a what, it would be a static, never growing. The how is that the music comes from the moment, it is spontaneous, it exists in the time it is created. And anyone who makes music according to this method conveys to me an element that makes his music jazz (Shipton, 2002, p. 663).

Braff avoids drawing too many obvious lines between musical genres and styles. Perhaps the wisest description for Braff's music is to call it improvisational with no other specific labels, considering the numerous influences discussed thus far. Regardless of what he performs, he always considers freely improvising an available option in a performance (1h59m36s). Braff aims to create the energy flow of life through his music:

> In this universe - and perhaps in many others - life forms, matter and energy are constantly interacting to promote flow or movement from one moment to the next. This is improvisation (Oliveros, 2004, p. 50).

Form as a Conduit: Musical Rules of Liberation

It is difficult to define the precise compositional techniques and forms that influenced Braff, beyond pointing out the common elements in his music and the music of his influential environment. In this section, I compare possible

compositional forms and techniques of all the music he indicated that he found influential, pointing out commonalities between his recordings and the genres and styles discussed.

The traditional Afro-American gospel improvisational 'frameworks' were, according to Williams-Jones, based in the Euro-American traits of this music since many of the gospel songs were European hymns too. These hymns were, "merely the framework around which improvisation could take place" (1975, p. 379). Traditional European hymns generally have short forms comprised out of one or two sections. The form is repeated in order to accommodate multiple verses, and the second section in the form, should there be a second section, is usually a repeated refrain between the differing lyrics of the verses. It is common practice for the accompanist, usually organ or piano, to somewhat embellish the repeated forms becoming more lavish as the hymn progresses through repetitions. It can safely be assumed that the idea of short repeated forms became familiar to Braff as a child, and that the music within these forms is somewhat malleable, therefore not requiring exact repetition each time. Music within a form could be embellished or altered appropriately, and even the form itself could be altered within reason. The vast majority of Braff's improvisational frameworks can be described as short repeated forms. Though, as we shall see, these forms fall into more precise categories as well.

The most common of these categories is the vamped section. Boyer notes that "in sixty percent of gospel music, vamps constitute one-half of the entire performance of a song" (1979, p. 30). Vamping constitutes repeating a short section of harmony or melody, or both, and is a structure that allows for improvisation. Usually the call and response between the preacher and the congregation or choir happens over a vamped section of music, often leading to the people becoming, "possessed and overcome in [a] state of high religious ecstasy" (Williams-Jones, 1975, p. 381).

Many of Braff's compositions are vamps with short melodic phrases or have vamp sections for improvisations. All of his albums, thus far, have at least one track that could be defined as having a vamp section, and his later work has moved more

completely towards this type of composition, especially his most recent album *Inside* (Braff M. , 2011). On this album, all but two tracks are composed either completely as vamps or with clear vamp sections. Braff's current project, *Greenwoman*, uses a similar compositional approach for some of the compositions; for example, "Goodmorning Sincity", and "Seed One" (Braff M. , YouTube.com, 2014), although the compositions for *Greenwoman* have longer forms and tend to be more complex when compared with the music on *Inside*.

Form as a Conduit: Free Form is a Thing Too

According to Boyer most gospel songs would end with a cadenza in a legato style performed "without rhythm". Sometimes entire songs would be performed this way (1979, p. 28). This kind of free rhythm performance allows for extensive manipulation of the material by the performers, with vocalists embellishing melodically and instrumentalists embellishing harmonically and otherwise. Most of the embellishment, according to Williams-Jones, would be diatonic or pentatonic in nature, similar to some pitch systems used in Africa (1975, p. 379).

It seems logical that when Braff accompanied the spoken parts of his father's sermons, much of his improvisation would have been in this "without rhythm" style. His familiarity with this manner of playing is evident in many of his recorded improvisations, sometimes as a whole recorded performance. It is quite possible that he became more proficient at this way of playing through his exposure to the numerous musical styles and genres that have a similar approach at times, and similar functioning and sounding sections, such as Western classical music and jazz. Braff did eventually, as discussed below, explore completely free forms through freely improvised music and twentieth century compositional approaches to form.

However, I believe that his first encounter with this approach was in the church environment. Sometimes he uses this approach as an Afro-American gospel type cadenza; for example, "Dance of the Fireflies" (Inside, 2011) "Yele" (Solo Live in

Lausanne, 2000) or “Together” (Together, 1999). At other times, like in “Song of Wonderful Things” (The Preacher, 2000) and “Guglie’s (Levitation #1, 2002), he creates long improvised introductions this way. “Eau” (Axor-Kompositionen, 1996), “Tied to Tide” and “Dawn” (Inside, 2011) are all examples of improvisations that are complete stand-alone works. These particular examples have a similar approach to the introductions and cadenzas of the other recordings, though could just as easily be related to jazz recordings, like the recording of Keith Jarrett’s *Köln* concert (1975).

Form as a Conduit: It’s a Classic

I am using the word ‘form’ here as generally meaning the largest structure of a composition. Form aids in making sense of the smaller musical structures by organising them into a greater cohesive whole.

> Form is the constructive organising element in music, governing the presentation, development, and interrelationship of ideas. The concept comprehends not only the basic structure of a work, but also the techniques and procedures used to develop ideas within the structure (The New Grove Dictionary of Jazz, 2002, Vol 1, pg. 823).

Form can be, and often is, reduced to a set of rules governing the way the music unfolds through time, meaning the rules creating the larger structures. However, even in less mainstream music, like free form music, including the aleatoric and indeterminate music written by Duchamp or Cage, or any of the twentieth or twenty-first century compositions, some concept of form emerges. Would a composition be considered as such if it had no form? What if that form were reduced to an algorithm or mathematical formula of some sort?[8] I believe form is an intrinsic part of the intention behind composition, helping to realise that intention.

8 Braff uses algorithmic thinking in his improvisations, explored in the third chapter.

Any idea that gives music structure is a valid form. Even in free form music, where the form happens spontaneously, a form eventually emerges.

Western thinking has explored concepts relating to form in music deeply. So much so that practically any form is now possible. It can safely be assumed that, in some way or another, Braff came into contact with most, if not all, of the canonical Western classical composers through his mentors and environment.[9] Whether consciously or unconsciously, Braff seems to draw on Western formal structures in his compositions. He may or may not be intimately familiar with all the canonical musical forms accepted and used throughout Western classical music history, but the varied number of approaches to form utilised in his recordings points to an extensive aural knowledge of various, standard Western forms, as we shall soon see.

Braff's approach to form seems to have been most influenced through his being mentored in, and exposure to, freely improvised music and jazz, which were both influenced by twentieth century composition. Composers like Boulez, Cage, Schoenberg, Stockhausen, Berg, Ives and Ligeti pushed the limits of composition through twelve-tone systems, atonality, experimentation with electronics, altered notation, tuning, rhythmic exploration, experimentation with form, incorporation of improvisation, and so on. Demonstrated below are various examples of the influences of this music period on Braff's creative output.

Braff's interest in twentieth century music incorporating improvisation led to his own experimentation with score writing for large ensembles (Braff M. , Aucune Idée encore, 1991). Although unusual for Braff, he has composed within the Western

---

9 Braff's classical mentors, most prominently Liliane Carlier, Annie Fischer and Jorge Pepi, have recorded many of the great composers. A discography of recently recorded works by Liliane Carlier is available at https://lilianecarlier.bandcamp.com/music. A discography of Jorge Pepi's recordings is available at http://www.jorgepepialos.com/principal/index.php?option=com_content&view=article&id=6&Itemid=9. A discography of Annie Fischer's recordings is available at http://www.discogs.com/artist/1424032-Annie-Fischer. All of these artists also have numerous videos available on YouTube.

classical tradition. One example is his 40 minute long concerto for piano and twelve-piece orchestra. He originally wanted to perform György Ligeti's piano concerto, but also wanted the freedom to improvise parts of the performance. Braff was unable to attain the rights and score for such a performance from the Ligeti family, and so chose to write his own piano concerto where he could "do [his] own variations, and be inspired by the score, and do [his] own thing" (Interview 2: 58m35s). With this piano concerto, Braff illustrated his awareness of Western classical instrumentation, an understanding and skill for notation and orchestration, and some level of skill and understanding in writing in a standard Western classical idiom.

Many of the same compositional techniques from twentieth century music are found in freely improvised music. Strictly attributing related aspects of Braff's playing to only twentieth century music would be short-sighted, since he is a product of a society in which musical elements of many styles and genres of music mix and influence one another. However, twentieth century compositional techniques, through whichever source, are present in Braff's music. Minimalism is evident in Braff's creative output in recordings like "Mouvement Perpétuel" (Axor-Kompositionen, 1996). Prepared piano techniques, such as placing objects into the piano and altering the tuning of the instrument, became more prominent through twentieth century composers like Cage. Braff often incorporates prepared piano elements in his playing, sometimes for percussive effect like in "Crimson Waves", "Mantra" and "Yay!" (Inside, 2011), and has experimented with altered tuning on his album *Not for Sale* (2005).

The progressive rock bands that Braff followed, discussed in more depth later, similarly experimented with compositional techniques most commonly found in the Western classical tradition, attempting to harness classical forms in a rock framework, especially nineteenth-century programmatic forms (Macan, 1997, pp. 40-46). Braff's exposure to the progressive rock interpretations of fugue, counterpoint, long multi-movement suites, and so forth (pp. 49-50) would surely have additionally influenced him musically. The recording of "Goodmorning Sincity"

or some of the tracks on *Voltage* (Braff M. , 2010) could, from this perspective, easily be part of a Pink Floyd album. One has only to attend one of his concerts to realise the mastery with which he plays long pieces and manages to construct concert programmes, often not preconceived, that have immaculately timed changes and energy management, keeping one engaged throughout the entire performance.[10]

Form as a Conduit: All That Jazz

Berliner's description of jazz musicians learning from one another matches how Braff became familiar with jazz, mentioned before. He 'cut his teeth' at informal jam sessions in the homes of musicians, at more formally setup jam sessions at clubs and bars, and even during gigs: watching other musicians, playing and sitting in sometimes (1994, pp. 41-51). At one time he attended many jam sessions, "three [or] four times a week," and sometimes even jamming every day of the week. He even ran his own weekly jam session on Wednesdays in Vevey (Interview 2: 1h55m16s).[11]

Through his exposure to jazz he learned the standard repertoire commonly used at jam sessions all over the world that jazz musicians are generally expected to be familiar with. Jazz has derived many of its standard forms from "popular songs, blues, religious songs, marches, rags, and ostinatos" (The New Grove Dictionary of Jazz, 2002, Vol 1, pg. 823). Standard jazz repertoire includes the basics, such as the 12 bar blues forms (jazz blues and standard blues), rhythm changes forms, and other standard jazz forms, or "harmonic prototypes", like 32 bar forms, ii V I chord progressions and so forth, described by Berliner (1994, pp. 76-81). More advanced jazz repertoire, such as Coltrane's and Shorter's compositions, which have more

---

10 I have been privileged enough to attend a number of Braff's concerts when he performed in South Africa. In 2010 and 2013 he performed a number of times at the Grahamstown Festival, where I attended all of his concerts. In 2010 I additionally attended his performance in Johannesburg.

11 For a more in depth description of jam sessions please refer to *The New Grove Dictionary of Jazz*, 2002, Vol 2, pg. 354.

complicated harmonic structures, and standard rules for substitution within the forms, also described by Berliner (pp. 82-88), became additionally familiar to Braff.[12] He has recorded his own versions of rhythm changes and blues influenced pieces. For example, "Pluie I" (Axor-Kompositionen, 1996) is based on 32-bar rhythm changes, and many of his recordings display blues ideas, riffs or bass-lines, such as "Green T"(Voltage, 2010), "Empathy for the Devil" (Inside, 2011), etc., though these are not necessarily in blues form.

Instrumentation: Toy Story

It has been demonstrated so far that Braff is familiar with the use of the piano in many contexts, including classical, jazz, gospel, popular music, experimental music and contemporary music. In these various contexts he has used the piano in a solo capacity, accompaniment capacity, as a lead instrument in a group, and as an accompaniment instrument in a group. The piano trio, of the format piano, bass and drums, is a well-known and primarily jazz format. Braff has used this format for most of his recordings. He formed his first trio shortly after *The Wizards of Oz* performance (Interview 2: 29m18s). Many of his albums, including *Levitation #1* (2002)*, Maximal Music, Not for Sale* (2005)*, Walkabout* (2008)*, The Tide Is In* (2002)*,* and *Voltage* (2010) are all in the standard jazz trio format. *Inside* (2011), with bassist Reggie Washington, is the most recent trio format recorded album.[13] In two other albums, *TNT Live in Cully* and *Yele*, Braff replaced the drummer with the West African percussionist Yaya Ouattara, still basically maintaining the trio format. Braff has also

12 In my numerous interactions with Braff, especially during my stay in Switzerland with him, it became obvious that he is extremely familiar with standard jazz repertoire, having many standards memorised and at least some knowledge of the prominent jazz musicians throughout jazz history, particularly those considered to be the jazz greats.

13 Washington has worked with, and continues to work with some of the biggest names in jazz, funk, experimental, blues and world music, amongst others, touring and recording internationally. For a full list of artists Washington has worked with, discography, etc. go to https://reggiewashington-official.com.

recorded and performed in duo settings, particularly with trombonist Samuel Blaser (Yay, 2007).[14]

The most recent project, *Greenwoman*, has a line-up that is an extension of the *Inside* band. *Greenwoman* has a standard rhythm section of drums and bass, like most popular jazz bands, with drummer Lukas König from the *Inside* band and new bassist Björn Meyer. Franco Mento was originally responsible for the live electronics in the band, but has since left the project. The project is fronted by vocalist Claire Huegenin, and has harmonic instruments filling both harmonic and melodic supportive roles, again similar to popular music and some forms of jazz.[15]

Braff's choice of instrumentation for *Greenwoman* is closely comparable to that found in popular music, and his choice is most probably influenced by this music. This seems to be especially true when comparing his instrumental choices to the progressive rock scene he followed, but similarly could be true for more contemporary popular music. Progressive rock bands usually combined various guitars, both electric and acoustic, with keyboards, especially analogue keyboards like the Mellotron, Hammond and string synthesizers, in the earlier days up to the mid-1970s (Macan, 1997, p. 193). In *Greenwoman* Braff plays various analogue keyboards incorporating sound processing, musically filling the roles of both guitars and keyboards associated with progressive rock.

A fifth band member had previously been included to control the electronic aspects of the *Greenwoman* band. Initially a DJ, Franco Mento, affected some of the band's various outputted sounds with analogue electronics, as well as playing sound clips as part of the created soundscapes. Mento has since left the band and has not yet been

---

14 For more information about Blaser go to Blaser, S. (n.d.). *http://www.samuelblaser.com*. (2 Worlds Interactive) Retrieved 02 24, 2016 from http://www.samuelblaser.com: http://www.samuelblaser.com.

15 König plays improvised music sometimes including electronics and elements of free improvisation, like in his duo project, Koenigleopold. Claire Huegenin holds a Master's degree in performance including jazz voice and has performed at festivals such as the Cully Jazz Festival with the band Jibcae (2015). Meyer is a known world music and jazz bassist, who has played for bands like Ronin under the leadership of Nik Bärtsch, a contemporary Swiss jazz band still in existence.

replaced. Since Mento's departure Braff has taken care of the electronics himself. Having the band's sound affected live and engineered live, as well as adding to the soundscapes with recorded sounds and otherwise, also live, by the engineer/DJ as an active band-member, is very similar to the setup of some of the earlier progressive rock bands, most notably: *Pink Floyd* and *ELP* (Macan, 1997, p. 50).

According to André Millard amplified sound, although present from the 1930's, became a common phenomenon in popular music from the 1950's onward becoming the iconic sound of Rock 'n Roll music (2004, pp. 3-5). Millard's focus is on the electric guitar, but he points out that the electric guitar by itself is not responsible for the resultant sound. The amp used and the technology used, developed over the next 50 years, in conjunction with the guitar, is what gives the identifiable sound. In addition, processing the sound of instruments other than electric guitars has become common practice in contemporary music and effects like delay, reverb, chorus, flanger, etc. are commonly heard. These same electronic processes are present in Braff's recordings and performances of *Voltage* (2010) and *Greenwoman.* Braff is very specific about how electronics are incorporated.

Greenwoman uses sounds waves produced through acoustic and analogue instruments and devices only. Braff wishes to keep the electronic element in the realm of "living gesture" (Interview 2: 4h38m6s-4h39m34s). The use of acoustic and analogue sounds from the onset of the sound creation to the final sound being produced by the speakers is very important to him. The main drive of his decision links to the spiritual motivation behind his musical experiences discussed below. For Braff, no digital or synthesized sounds, or digital sound processing must interfere with the sound created by the acoustic instruments and analogue effect units.

In his early twenties Braff realised that he could perceive a difference in experiential feedback from the acoustic piano compared with an electronically produced sound, such as those produced by the Moog. He found that the acoustic instrument gave him a far richer experience and, he believes, a more intense sonic reflection of himself, or self-sound-image. The self-sound-image is the result of a very direct

vibrational reaction resulting from the performer's hand, mouth, or other body parts, interacting with the instrument that results in sound. He has a theory that acoustic and analogue instruments act as amplifiers, "somehow amplifying the person's state, the person that's playing" (Interview 2: 65m16s), meaning he believes that the sound is a representation of that person's state of being at the moment that sound is created. When an electronic device is responsible for creating the final resultant sound, and the human being is only activating a trigger, a vastly diminished self-sound-image of that person is created.

Braff found that synthesized and digital sounds affected his experience of being in the 'now' preventing him from losing himself in the moment or entering trance states. For him, losing his connection with the musical 'flow' because of instrumentation became so unacceptable that, from his early twenties, he gradually limited his performances to acoustic instruments, eventually playing only piano (Interview 2: 60m12s). This he did, avoiding all other keyboard instruments, until the night of the Cully Jazz Festival where he was forced to play a Fender Rhodes during a jam session. During this time Braff realised that while playing the Rhodes he could have a similar level of experience to playing the acoustic piano, unexpectedly allowing him to engage in the 'now' or musical 'flow' as he had before. He believes that the reason he is still able to enter the same performance experience is because of the acoustic and analogue natures of instruments such as the Fender Rhodes or Wurlitzer.

Analogue instruments and effects units use voltage and magnetism but the sounds are still produced acoustically. The magnetic field is, arguably, able to carry a more accurate sound image representation of the musician than the digital processing is. Braff finds that he experiences enough real-time feedback, or self-sound-image, to enter his desired performance state. However, he still uses the digital musical platforms such as Max/MSP to alter the parameters of the effects units, effectively turning the knobs on the analogue devices with digital programming. He achieves

this through changing the digital signals into voltage output, allowing the digital devices to communicate with the analogue devices.

Braff's choice to not manually alter the various pots and switches on the analogue effects devices is rooted in not wanting his performance state interfered with. For him, it is important that he does not have to engage with: “Choosing your knob, looking at the position, switching back, recall presets, and, you know, all… those gestures that I think would throw me out of the music flow” (Interview 2: 4h28min38s). His emphasis on keeping sounds true to their acoustic and analogue sources maintains what Macan believes was destroyed through technology in progressive rock. Macan’s theory is that progressive rock was somewhat forced to experiment with digital and synthesized sounds after the mid-1970s: “I believe that the elimination (or at least severe de-emphasis) of acoustic instruments in some ways destroys the soul of progressive rock” (1997, p. 193).

Motivations: Spiritual Statements

Although Braff’s classical training certainly has had an impact on his performance ability and resultant sound, he is not concerned with the aesthetics usually associated with classical piano playing. His music is timbrally in-depth, harmonically complex, structurally involved and musically complex and he is not generally consciously interested in controlling these elements while he is performing, especially when improvising. He chooses to aim for something else while performing.

Mostly, Braff is interested in being ‘present’, or as is known in the new age pop culture of the 60s and 70s as ‘the now’. “The sound result is a side-effect of the playing, and I focus on how I feel” (Interview 2: 1h43m53s). For him, his most ideal performance or improvisational setting happens when he can be without thought, completely in ‘being’, in the ‘moment’ and without judgment. Having too many preconceived formal ideas about a performance interferes and makes it difficult to remain ‘present’ in the performance (Interview 1: 1h55m-2h).

For this reason, the aesthetics of good tone production commonly associated with classical piano playing, and connected to piano technique, do not interest Braff. He says, “I don’t think I have any aesthetics. I don’t have an idea of some type of result I would like to achieve, or beauty I would like to get close to or aim for” (Interview 1: 1h56m). Engaging with the quality of his tone production would shift his focus from his experience of the present moment, since it would require him to listen, make a judgment, and adjust his playing according to the ideals of an imagined projected sound he would be striving to attain, instead of simply observing the unfolding moment. He does not look to improve his own tone production, never practicing or striving to improve his own tonal or dynamic scope. His recordings do, however, demonstrate an ability to extensively manipulate and control tonal and dynamic aspects of his piano playing, most probably developed through his early classical training, discussed further below.

For Braff, being focused on the present moment can lead to two possible extreme states of experience for the performer. He has formulated this theory based on his empirical experience while performing. The extreme states occur when the performer completely engages with either vertically complex or horizontally complex musical structures. Both kinds require different, but specific states of being on the part of the performer. Musical elements that strongly relate to each other tend towards verticality and towards experiences of unity; linearly related musical elements, or sometimes when little or no relation in musical elements occurs, tend towards horizontality and towards experiences of individuality.

In Braff’s theory, verticality represents a spiritual unity with all things of this universe, which could be considered as ‘connectedness’ and losing a sense of self. This state is represented musically through vertical structures such as a single chord created through stacking frequencies in a continuous cycle to create an unchanging and uniform field of sound. The slowest frequency of the chord is considered to be the root with the other frequencies relating somehow to this root. Such cyclical structures can occur in the relatively fast frequency range of musical pitch or in the

slower frequency range of rhythm or in both ranges simultaneously. The pitch range and the rhythm range both have a root, and when both occur simultaneously the root does not necessarily have to be the same frequency for the rhythm range and the pitch range. When a performer is responsible for creating the sound, in part or completely, of one or both of these ranges they have a chance of entering a related trance state, thereby 'connecting' to the universal part of themselves. Vamped sections of music, or vamp-like compositions, discussed above, more easily allow for a 'vertical' experience by the performer/s.

Horizontality expresses individuality, self or ego. Horizontal extremity occurs musically when there are multiple frequencies in a changing field of frequencies. Music with either no root or a constantly shifting root is horizontal in nature; therefore it is harmonically, melodically and tonally complex music and music that is not rhythmically cyclical. When a performer is focused on creating melodically, harmonically or rhythmically changing music they are engaged with expressing their sense of self, and not their universality. Such horizontal structures are the expression of the individual leading to aesthetically beautiful and emotionally touching, "blood and flesh," daily experiences (Interview 2: 5h39m53s). Most music is, according to Braff's theory, a combination of these two extremes in differing proportions. (Interview 2: 5h37m27s).

Whether intentional or unintentional, Braff does have many practices in his music that are parallel to his early religious experiences of music. His theory illustrates how he generally experiences music regardless of the format it is in. His theory somewhat fits the rich experience of the religious context that he grew up in, according to the typical definitions by Williams-Jones and Boyer. It is probable that he first had 'vertical' and 'horizontal' experiences in church, even though he conceived his theory much later. Part of the early philosophy, according to Boyer, that created African-American gospel was that the service and the elements within it, including the music, had to allow God to "have His way" and "each person had to seek out his

[or her] own salvation" in that setting (Boyer, 1979, p. 7). To create a free but supportive structure for this partially improvised outcome the music had to have:

> …simple melodies capable of much embellishment, to a text of few words which could support much repetition, leaving spaces for the reiteration of certain words by the congregation, and therefore freeing the soloist for the much-needed textual interpolations (Ibid, pg. 7).

Braff's theory aligns somewhat with the description of a musical Afro-American gospel ideal setting, in which the music is not about performance in an exhibitionist sense. 'Horizontal' expression is possible through the melodic embellishment and freer "without rhythm" parts. 'Vertical' expression is possible through the simple repeated text and the commonly found vamping of sections. For Braff, the 'vertical' musical experience is the most fun.

Although mainly focused for a time on verticality in music, as is clearly demonstrated through the *Inside* (2011) album, Braff has expressed a desire to explore horizontality in his music. With his *Greenwoman* project he hopes to explore and integrate both horizontal and vertical experiences (Interview 2: 5h38min17sec).

Motivations: Be the Target

According to Braff, Western art is mainly product based; meaning the artist aims to create an artwork or product. Once completed, the artist displays his/her artwork and the audience appreciates the work based on the resultant product and can reflect on the process. The main focus is not on the process of creation but on the product itself. In Braff's view, artworks in the Western sense are books, compositions, buildings, paintings, sculptures, etc. (Interview 2: 1h37m). Western music, that is considered art, is generally viewed in the same manner as other Western art forms: The performer/s, company, etc., create a product/production preconceived in many if not all parts. Usually the individual compositions are written well before performance, and are rehearsed for a specific portrayal.

For Braff, Western art can be considered egocentric because the resultant artwork is displayed as something the artist, or 'I', has produced. Oriental art forms, however, include "karate", "cooking", "yoga", "archery", etc. Yoga is not usually presented on stage as an art form to be appreciated by an audience (1h38m4s) He says, "For the Orientals art is practice" (1h39m5s). In many cases there is no audience for Oriental art forms. He lists *Zen in the Art of Archery* (Herrigel, 1953) as one of his major influences in forming his way of thinking.

Similarly, Braff's own 'performance' is more about the process of performance, the state of the performer, than the observed result or heard music. He strives for his performance to be like his understanding of the Oriental art forms: "Repeat the gesture hundreds of times until it disappears, until it's not about the gesture anymore. It's just about you being here" (1h40m28s). At performance time, his musical process is only about the experience of creating music. This is a second reason his music "is not about aesthetics" (1h41m48s).

Western artists are often required to enter a higher state of mind or being, akin to Braff's 'being in the now,' while performing, and in this way Western performance art is similar to Oriental art. However, the focus in Western art remains on producing a specific resultant product through the performance for an audience, which remains, for him, a critical difference from his own performances.

Of course Braff's conception of the Orient is influenced partially by his personal experience in the Orient and partially by his extensive time in a European environment, an environment that has its own ideas about the Orient. In Braff's description about the differences between Oriental art forms and Occidental art forms there is a sense of 'us' and 'them.' For Braff there is enough of a difference in approach to creative processes that a concrete distinction can be made.

According to Said in *Orientalism*, much has been done through the writings of numerous orientalists over at least the past two centuries, and, to a certain extent, is still done now, to create in the Western mind, and later even in the Eastern mind, a distinction between the people from these regions of the planet. "The Orient that

appears in Orientalism, then, is a system of representations framed by a whole set of forces that brought the Orient into Western learning, Western consciousness and later Western empire" (Said, 1995, pp. 202-203). The kinds of distinctions created in Orientalism described by Said are generally negative, distinctions such as "Oriental character, Oriental despotism, Oriental sensuality…" and so forth (Ibid.), with the Oriental mind being described as "gullible, 'devoid of energy and initiative,' much given to 'fulsome flattery,' intrigue, cunning and unkindness to animals… Orientals are inveterate liars, they are 'lethargic and suspicious…'"(pp. 38-39) and so on.

In Said's view, the myth of 'distinction' and 'mystery' between Eastern and Western modes of being has been much perpetuated and refined over the last two hundred years. Certainly people and cultures differ, but not to the extent that the 'science' of Orientalism would have one believe. One of Said's key standpoints is that the West has viewed Eastern cultures as inferior and less powerful and has endeavoured to rule these cultures through gaining knowledge about these cultures and describing and defining them from a Western perspective. Through this knowledge the West can control the East because the West ultimately creates what the East is in these descriptions, thereby controlling and restricting what the East is, was and can become.

Braff is a Yoga practitioner, he meditates and learns about Hinduism and Buddhism where he can and clearly aspires to incorporate what he sees as Eastern philosophies into his music and way of life.[16] It is possible for Braff to embrace Eastern philosophy and culture into his own life because of the societal changes in consciousness, brought about through the various facets of his society that did so, such as progressive rock, twentieth century composition, freely improvised music and so forth, as described throughout this study. However, a polarisation between a Western and Eastern philosophy, mind and mode of being is still perpetuated today.

---

16 Braff had Hindu comics describing the stories of the various deities in his bathroom when I stayed with him and we sometimes spoke about what he saw as Buddhist views.

Ultimately, I believe there is probably very little or no difference between the minds of the people of the world except for the differences that they themselves, through their cultural practices and beliefs, decide to create and perpetuate. Braff does not ascribe to beliefs that the West is superior to the East, seeing value in both. His search for meaning in Eastern tradition is a search to more deeply understand himself, not to define the East in world terms. He does not seem restricted by worldly distinctions of races since he openly explores and incorporates what he can from African, Middle Eastern, Far Eastern North and South American, Australian and obviously European cultures.[17] He certainly avoids judging any culture as inferior or superior and reserves his preferences to what serves him best. His sense of 'us' and 'them' seems to be on equal terms between the former and latter, validating all viewpoints equally; quite different from traditional Orientalists. It appears, that for Braff, nationality itself is not a restriction on any person's abilities; much different from traditional Orientalism views.

When comparing Braff's understanding of Eastern art processes with the other performance processes from the styles and genres discussed thus far that have been influential for him, certain similarities become evident. For instance both Afro-American gospel and Braff's Zen approach to performance place importance on entering a specific state. The process is what is valuable, not the result. Afro-American gospel and church music, in general, aims to worship God, and does therefore not aim to be egocentric.

Similarly, progressive rock music of the early 1970's had the belief that created music had to be the result of an individual's perceptions of himself and of the world. The musician's vibrations created through the music portrayed that musician honestly and somehow freed them from the limitations of everyday life, connecting them to a deeper, more meaningful experience. Jimi Hendrix is quoted by Wicke illustrating these ideals: "We make cosmic music, or ego-free music" (1990, pp. 98-

---

17 Australia is included here because Braff mentioned to me that Bruce Chatwin's book *Song Lines* (1987) influenced his thinking after reading it.

99). Macan argues that, “the hippies’ pantheistic Eastern-inspired sense of the oneness of things, of an overarching superawareness in which all consciousness is joined – ultimately, a belief that each man and woman is God – has contributed to the formation of the modern New Age movement” (Macan, 1997, p. 79). Braff seems to share these ‘New Age’ ideologies. It is likely that the popular music that he was influenced by, especially progressive rock, developed his social awareness and most likely extended the spiritual beliefs he already had developed through his Christian background.

Freely improvised music was also influenced somewhat by Eastern spiritual philosophies, especially the improvised music that drew inspiration from composers, like John Cage, who were deeply interested in these philosophies. It becomes clear that Braff’s philosophy and deep interest in being completely aware and ‘present’ in each moment, particularly when performing, stems from multiple points of influence within his life experience. The generally ‘New Age’ European contexts surrounding him, which questioned meaning and existence on multiple levels, seem to have had a combined influence on his thinking and perceptions.

Motivations: Who is Listening?

Although he mainly focuses on fully engaging with his own experiences, Braff has theorised about the role of an audience, and his impact on his audience, when performing. The theory shows that he believes that all audiences somehow are part of the performance processes. A key difference between the purposes of Oriental art compared with the purposes of Afro-American gospel is that the Afro-American gospel audience is usually part of the performance, engaging with the process of creating music, where Oriental art forms often do not have an audience or audience participation. Braff’s impression of the role of his audience in a performance space seems to be between these two extremes, but also inclusive of both.

Braff’s empathetic theory is that any observer experiences the actions of an observed person similarly to if the observer were doing that observed action themselves. The observer not only relates mentally to what it feels like to be the

sportsman playing the sport, an actor in a movie, a musician performing, and so forth, but also experiences it physically along with the observed person. The audience observes Braff and, through their observation, experiences what he is doing, through a combination of who they are individually, how they affect each other, and what Braff is experiencing and doing. The thinking behind his theory can be likened to the concepts of energy exchange and role of observer and observed found in quantum physics; another strong influence of the counterculture of his generation.

Despite his theory, Braff does not focus on his role as an exhibitioner with an audience as observers of the exhibition. As previously discussed, his aim while performing is not to exhibit what he has learned and can do musically, or even to affect the audience in a specific manner: "which I might be concerned about, but truly not so much. [W]hen I play I'm more concerned by my own experience of doing it." (Interview 1: 36m20s) From the audience's perspective, Braff is most probably perceived as an artist producing a product for them to observe.

So why does Braff perform for audiences at all? He has noticed that audiences affect his experiences when performing. Having an audience (observers) creates an environment with a unique kind of pressure. For Braff, audience observation amplifies his ability to focus and deeply enter the Zen-like trance state (1h29m35s). In these moments, the music and the audience are both tools used by him to explore his own spiritual self, entering a trance state as often as possible and testing the limits of his being (Interview 2: 62m48s). Braff enjoys and aims to, "…dive into the playing and disappear there, vanish there" as often as possible (Interview 2: 4h5m32s). His audience observes and aids him, and possibly joins him, in his musical journeys into himself. However, the audience's experience is largely unimportant to him.

Braff is not uncaring towards his audiences. Ideally he would like his audiences to have fun in his performances. Fun may seem like a trivial focus in terms of experience, but Braff has said, and will tell you himself, that fun is a top priority of

his because he thinks of himself as important in the universe, and so his quality of experience must also be important (Personal communication: Jan 2015) (Interview 2:1h13m40s) (Interview 1:2h38m45s). Braff believes that when he dances on stage his audience empathetically dances with him, compelled to move in their own way.

Braff has found that he really enjoys the sensation of his body moving, or dancing, in accordance with, and in relation to, the pulse of the music that he is creating as he is creating it. He likes to experiment with all physical experiences while playing: "Those are all body actions and experiences. This is where the fun is" (Interview 2: 1h45m32s). The experience of dancing, when strong enough, further aids him in entering a trance state (Interview 1: 36m, 2h2m25s, 2h37m) (Interview 2: 1h3m20s, 1h43m53s). The strong pulse, Braff believes, is what enables the dance-trance-state, linking to the vertical aspects of his previously discussed theory.[18] 'Groove,' or 'grooving,' is an important part of Braff's approach to creating music and in his definition of 'groove' he links 'groove' to a strong pulse and dance-ability of the music (Interview 1: 13m35s). The particular kind of 'grooving' and strong pulse feeling Braff is referring to here is as a direct result of his use of metric-bridges, discussed later.

Since dance, a clear 'grooving' pulse, and some sort of religious trance experience are all part of Afro-American gospel it is probable that Braff first experienced these things in church. The dancing trance experiences described here are generally experienced in groups of people. Through his further exploration, Braff would have come into contact with the same elements in other kinds of music. For example, dance is also a prominent part of popular music and jazz, especially jazz of the swing era. It is possible that he experienced some trance aspects when exploring West African music. The seeds of experience related to dance, pulse and trance sown in is being as a child have grown to be an important part of his philosophy and approach to music.

---

18 How Braff's specifically trainings to strengthen his pulse feeling is discussed later.

Tying Up Tension and Release: Table for Four?

Frequently there are only brief glimpses in Braff's recordings of his contrapuntal skill. A couple of his earlier recordings, Don Christobal I and Eau (Axor-Kompositionen, 1996), clearly demonstrate his understanding and ability for contrapuntal music from the Baroque period, although harmonically these recordings are more adventurous in places than would traditionally be expected of this period. Both recordings demonstrate the ideals of the period in that the two, three and sometimes four parts are equal in melodic importance, continuously swopping roles from supportive to leading. Phrase lengths are not regular two and four bar phrases of the classical period, but there are clear phrases. Rhythmically there is no strong emphasis on pulse, but temporally there is constant use of the same note values within a closely related range of notes (half-notes, quarter-notes, eighth-notes, sixteenth-notes). Interestingly, in "Eau" there is a section where Braff plays parallel fifths creating a resultant sound reminiscent of early organum singing of the medieval Christian monks. Although not a prominent feature of Braff's playing, his contrapuntal skill cannot be ignored.

"Tied to Tide" somewhat demonstrates Braff's understanding and use of tonal harmony. It includes the use of harmonies commonly associated with jazz as well as triadic harmonic knowledge from Braff's earlier Western classical and gospel influences. Typical harmonic progressions are often executed in four-part voicings, also commonly found in his other recordings throughout his career. In fact, at least one example of this four-part approach can be found on every album he has recorded, even if only for a section of a performance. Some examples include "Together" (Together, 1999), "Noemi" (Live à Cully, 2005), "Song of Wonderful Things" (Yele, 2006), "Gospel" (The Preacher, 2000), "Eau" (Axor-Kompositionen, 1996) and "Dawn" (Inside, 2011). His skill for creating contrapuntal lines is further demonstrated, to a degree, in "Tied to Tide".

Tying up Tension and Release: Tied to Tide

A deeper look at Braff's solo piano improvisation "Tied to Tide" (Inside, 2011) serves to illustrate how his early Western classical training and experience with church music and Afro-American gospel strongly influence his sense of tension/resolution and the overall manner in which he makes music.

Braff has a vast timbral range and dynamic range, previously discussed. In the first few seconds of "Tied to Tide" he creates a light, gentle tone. As the performance progresses, the sound changes to include a depth and warmth in the tone not heard before. Every idea is phrased and shaped, both dynamically and timbrally. From approximately two minutes onwards the melodic line becomes piercingly percussive, timbrally dissimilar to the introduction. This change in timbre adds a level of tension, similar to the timbral changes in gospel singing and classical piano playing discussed above. The melodic line builds to the climatic point just after the three-minute mark after which point there is a stark contrast in melodic and harmonic material. In this section, his cleanliness and effective use of the damper pedal at the piano is illustrated. Throughout, Braff is 'voicing' his chords, in the classical sense, by shifting the balance between various and alternating contrapuntal melodic lines and notes, thereby highlighting the required melodies through the use of varying timbres and dynamic levels. Dynamically, the performance in the end returns to a similar level as at the beginning; however, the end contrasts in that it is timbrally warmer.

Considering the recording both harmonically and intervallically gives an even deeper understanding of how exactly Braff has been influenced. An amalgamation of both jazz and classical harmonic language is present, seen through the following analysis. The recording starts with a mid-range minor second interval between Db and D with a Bb added a sixth above. This structure is dissonant and does not have a clear tonality, which could be interpreted as tense and unresolved. There is no clear time signature adding more uncertainty. He adds an Ab a fourth below the Db, remaining unresolved and ambiguous. The relatively long note values and the repetition of each structure give a sense of calm, beginning, and careful deliberateness. He finally

resolves this opening moment to an Ebmaj7/G, voice-leading the notes and resolving them stepwise. This chord is familiar enough, being harmonically recognisable, but not completely resolved since it is in an inversion and has a minor second interval in the structure.

The following section maintains the same rhythmic approach, creating a tenuous link, and introduces fragments of melody in a new tonality from the previously, vaguely implied Eb major. Gb major, somewhat related though more distantly to Eb major, is implied by the dominance of the key, Db7, making an appearance as the second structure after the initial ambiguous but warm Cb(add9)/Gb. The clustered structures imply a Gb major with this phrase ending on an ambiguous structure that could be interpreted as Gb6(add11)/Db. The next section starts with the first clearly stated harmonic shape: a D major triad over a bass structure of a perfect fifth of a G and a D. Again the tonality has shifted dramatically, but remains major in essence. Ambiguously, both G major or D major are possible, but an inner voice movement lands on a C natural, implying G major. Subtly, using his skill of voicing a chord with some notes louder than others, Braff adds a Bb in the middle of the structure now creating a C7(#11) finally resting on the same chord in first inversion. The next section is suddenly darker with an Fmin6/9 moving to first an Ebmin11 and back and then to an Eb6 and back.

Harmonically and rhythmically, the performance proceeds in a similar manner until 1m33s, always subtly changing harmonies and keys within the phrases with more dramatic changes at the beginning of sections. Each section is between 12 and 17 seconds with the exception of one that is approximately eight seconds long and each section ends with a long held chord, as if taking a breath. Everything up to the 1m33s mark could be seen as ‘waves’ pulling the listener in different directions, never quite settling into a tonality or resolving completely.

The first notable ‘structural’ deviation at 1m33s is indicated by Braff arpeggiating his harmonic constructions, creating a more intense and energetic atmosphere. Shortly after this arpeggiation is a very melodic section, which, for the first time, is an

extended section lasting approximately 1m13s. This melodic section builds to a climax, starting in the middle range of the piano and gradually extending to both the lower and higher range extremes of the instrument. The dynamics increase as the climax is reached, getting louder, and at the climatic point Braff slows down his melodic material causing a ritardando effect, despite the lack of a set time signature.

At this point it feels as if a statement has been made; some part of the journey is complete. From the climax, Braff gently brings the listener back to the middle range of the piano transitioning into a choral, hymn-like section that has a smaller climax of its own. This hymn-like section, which is the most tonal section with familiar chord progressions, almost points out that the climax in the previous section was a spiritual experience now being explained in human, understandable terms. As it progresses, the hymn becomes more confident, dynamically gradually louder and the chord structures encompassing more of the lowest notes of the piano. Finally, with a pedal point in the midrange of the piano lasting approximately 1m38s, with various repeated themes constructed around it, the piece dissipates, bringing the listener gradually back to peace with one note, that pedal point note, which is also the root of the final major triad, and tonic of the finally resolved key.

The interpretation presented here is only true, however, when viewed from the perspective of Western culture. All of the musical elements described above from Tied to Tide, including form, rhythm, harmony, melody, dynamics, range, phrasing and so on, are rooted in the Western classical idiom with harmonic hints at church music, Afro-American gospel and jazz harmony. It is noteworthy that the title of this improvised recording lends itself to the interpretation above in that Braff chose to portray the pushing and pulling of ‘tides’, which we are ‘tied to’, in the way that he has. His expressive range through various forms of tension and release demonstrates the ideals with which he approaches playing music. All of his recordings seem to have some sense of tension and release created in many different ways, sourced consciously or unconsciously from all of the music he has explored.

The regularity of the sections at the beginning of the “Tied to Tide” recording, the overall structured feeling of the whole recording, the dynamic range and tonal colour, the harmonic language, the melodic material and the sense of phrasing, the increase in number of notes and pitch range on the piano to increase tension, and the contrapuntal playing in places, do not represent extensive preconceived planning and practise. However, his use of rhythmic devices, discussed in depth in the upcoming chapters, is well practised and he consciously aims for a rhythmic freedom through mastery of these devices while being aware of their energetic implications. His use of electronics in the more modern projects is somewhat calculated and predetermined as well, aiming for a specific result related to tension and release and specifically aimed at enhancing his rhythmic ideals.

Summary

In this chapter I have given some background information on Braff to give the reader scope for who he is and why he does what he does in the way he does it. This framework gives the reader a starting point for relating to his rhythmic approach, the subject of the remainder of this study.

We have seen that Braff’s exposure to music early in his life dramatically influenced his musical development. The first major influences were from the church environment that he grew up in, combined with early Western classical training at the piano. The church environment made him aware of a spiritual world in which trance and dance play a significant role. He learned the basics of a harmonic language associated with this environment, and how to voice-lead the notes of the harmonies, with each voice having a melodic value, within a Western tradition. His melodic language similarly developed at this time. Significantly, he learned basic forms from the many hymns and Afro-American spirituals learned, including the use of vamped sections. Furthermore, he first explored improvisation, and even played a significant role in his father’s church as an accompanist that had to improvise introductions and endings. The musical elements from this time in his life are still present in the music he creates now, and have been throughout his career.

Braff's Western classical training taught him how to deal with the piano as an instrument, learning a dynamic range and developing a timbral awareness. His instrumental technique developed to a high degree. Classical forms further expanded his awareness of form, eventually lending to his understanding of free-form, or form determined only as a rule, as seen in twentieth century composition. Compositional techniques from Western classical music, like prepared piano, contrapuntal approaches, instrumentation and orchestration, and so on, are evident in his recordings and his career.

We have seen how Braff's later exposure to jazz, freely improvised music, progressive rock, experimentalism, and pop music developed him musically, furthering the skills he had learned through his early musical exposure and training. He developed a high level of harmonic skill, and a language with which to label parts of harmony effectively. His improvisational ability and awareness expanded from being bound to the church environment to being able to fit into any Western improvisational context. He became known and successful as an improviser. His compositional skill expanded, as did his sense of form. He explored the various roles the piano could play in differing contexts. Many other instruments and their roles in various musical contexts were also explored, especially those involving a band setup. In addition, he ventured into the world of musical electronics.

With this skill base, Braff began exploring rhythmic concepts. This he initially did through his work with Farafina. The rhythmic specifics of Braff's rhythmic concepts and how they developed are explored later in this study, though it is significant to note their origin as heavily influenced by West African musicians. His interactions with these musicians led to his breakthrough recordings with Blue Note Records.

Lastly this chapter has investigated Braff's motivations for creating his music, exploring his various philosophies and theories. His spirituality appears to be informed by all the major religions of the world today, to some extent, and even quantum mechanics plays a part in his beliefs. He focuses on exploring and understanding his own experiences, and the qualities of these experiences. At the

core of exploring himself, is a philosophy of being present in the current moment, 'nowness.' Being able to engage with the 'now' is so important for him that he has made many of his major musical decisions based on whether it affects his ability to enter a state of being in the 'now.' These include his choice of instrumentation, compositional structures, use of electronics, ignoring traditionally considered musical aesthetics, harmonic usage, and rhythmic exploration.

Overall, he believes that it is vital that he has 'fun,' in the broadest sense of the word, as much as possible, not only, but especially when performing. Entering a trance is considered an ideal state of performing and is 'fun'. A strong sense of pulse, which causes a sense of dancing, and music that grooves, is vital to his trances. The audience influences the performer, helping to create a context in which the trance experience is amplified. These same trance-inducing elements are evident in almost all of the music that was majorly influential on him, starting as early as the Afro-American gospel influences, and continuing throughout his career.

His theories inform his musical practice. Musically, he believes that there are two extreme states of experience, that of universality, and that of self, expressed through vertical and horizontal musical structures respectively. He focused for a long time on creating music that allows access mainly to the vertical experience, but now aims for a more balanced approach. Another theory is that music creates a 'self-sound-image', which the musician perceives in performance. This self-sound-image is strongest when playing acoustic instruments, though analogue electronic processing of acoustic sounds is still acceptable. The experience of the self-sound-image is partially responsible for allowing a trance state to occur. The last major Braffian theory explored was that of the empathetic experience of the audience while watching the performer/s. Simply put, on some level, the audience experiences a performance as if they themselves are the performer.

Chapter 2

Time: Mythically Speaking

Braff has his own 'universal' rhythmic and time concepts. These concepts range from dealing with the broader aspects of musical time, to the very specific aspects of rhythm. To begin with, let us consider the broadest time concepts related to Braff from the music that heavily influenced him.

Universal time concepts tend, as pointed out by Wilson, to imply a spiritually nuanced approach to musical time (p. 571). Forms of African American music, especially more contemporary forms, often have a focus on aspects of "ritualistic and sacred time," which is in contrast to some Western music that tends to be "directional and show a development" over time (2000, p. 567). The interpretation of time can have various meanings, but when discussed with reference to ritual, time takes on a mythical and eternal nature meaning ritual and time are interconnected (p. 571). Wilson considers the tendency in African American music of re-instating "sacred time beyond time" as a defining characteristic of this music (pp. 517-572).

Rituals re-enact what has happened many times in the past in the present moment. The re-enacting takes the same form as the original act and has, hopefully, the same intentions. In this manner the ritual connects to an eternal time that has no beginning or ending; rather, it is a time that is stepped into and out of, a time that always exists outside of everyday time. From an eternal standpoint, re-interpretation within the ritual does not lead to new results, instead, it shows another facet of the same 'eternal soup' that was present in the original act. Ritualistically, no music can then be viewed as new/old, progressive/backward, or advanced/simple, and neither can any element within the music, since all aspects of the music are re-interpretations within the ritual.

This ritualistic view of music, as Wilson points out, is not a traditional Western view. However, music has been viewed this way by Sun Ra and later Anthony Braxton, both influential musicians in freely improvised music and jazz. Artists like Ra viewed music as ritual as a means of creating music that was anti-Western, in other words, music not used for entertainment or art (p. 573).

There are many parallels between viewing music as ritual, rather than art or entertainment, and Braff's musical views discussed in the first chapter. The manifestation of ritual requires the presence of two central factors: "the designation of a 'sacred place,' and the replacement of everyday time by 'sacred time'" (Wilson, 2000, p. 572). As discussed, Braff does not view his performance space as a place to entertain the audience or view his music as Western art. Rather, the performance environment can be likened to a 'sacred place' in which the audience adds to the environment. The 'sacred place' aids Braff in his attempts to enter a specific state of consciousness, namely his trance-state. In this trance-state he enters a kind of 'sacred time,' which he views as connecting to, or entering into, eternal consciousness. Since his performances include both 'sacred places' and access to 'sacred time,' they can be likened to ritual. It is not surprising that Braff, with such strong influences from the philosophies of freely improvised music and Afro-American gospel, discussed before, would have such ritualistic goals for his performances, even if he himself may not be aware of the similarities between his performances and rituals.

Should Braff's music be considered primarily narrative or ritualistic? I believe both. As mentioned, Western music most often develops themes or ideas over time, therefore musical works tend to be narrative, unfolding in character. Non-Western music, on the other hand, often exists as a sound state with no clear "beginning or ending" (Wilson, 2000, p. 569). Conventional forms of jazz, Wilson argues, achieve a balance between these two time concepts, being that elements of both co-exist in one performance.

Similar to conventional jazz forms, but different in method, I believe Braff's music achieves a balance between a narrative journeying through established temporal-space states, and ritualistic sound-states. There does not appear to be a hierarchy of preference between these states, since both occur in his recordings. A clear example of this balanced state is his composition "Goodmorning Sincity."[19]

He calls this kind of composition a "rhythm journey." As evident later in the research, the piece has numerous vamping sections, each relating to 'vertical' experiences of ritualistic time. However, each section transforms into the next, taking the listener on a narrative 'horizontal' journey through multiple temporal-spaces, with a clear start and destination to the piece. Clearly this composition includes both narrative and ritualistic elements, but not in a conventional jazz format. His most recent recordings, and much of his music recorded from 2010 onwards, incorporate a similar approach of attempting to find a balance between narrative and ritualistic sections, or, in another sense, 'horizontal' and 'vertical' experiences, as discussed.

Time: It's About Time

A working definition of temporal-space is required in order to discuss the effect of Braff's rhythmic approach. As we shall see, temporal-space is created in the mind of the musician/perceiver and gives a framework for understanding and relating to rhythmic material. Musical time and space are difficult to define, but as a departure point Gordon's definition is useful:

> The brain best understands time, whereas the body is more capable of understanding both time and space, with space giving meaning to time. Space can exist outside of musical time, but time in all forms is dependent upon space. … Time is relative speed of direct continuous sound with a stipulated beginning and ending that takes place within space, the center of space being everywhere with boundaries nowhere.(2009, p. 3)

---

19 This composition is analysed with recording later in this study.

In order to allow for simpler understanding, and as an extension to Gordon's definition, I propose that time can be considered mathematical and logical. We can calculate time, measure it, label it and segment it. Space, on the other hand, can be considered physical and experiential.

One aspect of our experience of space is how we experience our surroundings. We experience differing spatial sensations when standing in an open plane, like a desert, grassland or beach, compared with a closed space like a small room, a cave or a closet. Every environment has subtle and obvious feelings associated with it. We can further experience space through movements that allow the experience of shifting weight in our own bodies or our interaction with objects, and we experience space through the way in which we, or the objects we are interacting with, flow through space.

Time is abstract and theoretical when excluded from space. Time becomes experiential for us when interacting with our experience of space, meaning space determines how we experience the measurable time elements. In music, time is essentially how we quantify our experience of space.

If my inference is correct then temporal-space is a perceived temporal invariant that allows the perceiver "to direct his or her attention to a particular (future) location in time" in addition to creating a backdrop for the perception of rhythm patterns possible as part of that particular temporal-space (London, 2012, p. 10). Temporal-spaces have varying characteristics that guide our attention (Ibid. p. 11). The attentional points within the temporal-space are measurable as time. Leo Smith, regarding the relationship between time and space in relation to his own music, said: "therefore, there is no intent towards time as a period of development. Rather, time is employed as an element of space" (Wilson quoting Smith, 2000, p. 570). As will become clear, Braff's approach to rhythm is centered firstly around altering temporal-spaces, thereby increasing the number of conventionally possibly relatable temporal-spaces, and then, secondly, in increasing the number of possible rhythmic elements related to those temporal-spaces.

If my definition of space is true, then musicians experience temporal-space by how they audiate pulses (macrobeats), subdivisions (microbeats) and rhythm patterns *interacting*, not mathematically, but sensationally, or experientially, and the experience is linked or similar to how we perceive ourselves in space and time outside of music.[20] How musicians audiate macrobeats, microbeats and rhythm patterns is based on what they have previously experienced through time and space, particularly with relation to movements.[21] Additionally, temporal-space nuances the audiated musical meter according to the audiator.[22]

Braff believes that the time flow in music occurs in waves, not in a linear fashion as is probably more commonly believed (Braff M. , Interview 1, 2015, 17min). Meter has been previously conceptualised, most likely unbeknownst to Braff, "as a kind of wave, (or as a composite of several waves)," by Zuckerland (London, 2012, p.18, referring to Zuckerland's 1959 publication). Braff, generally, but not always, considers macrobeats, as each being a whole wave. Expanding on my previous thought, temporal-space is additionally responsible for defining the possible relative size and shape of these macrobeat waves in the perceiver's experience. Precisely how Braff manipulates musical temporal-space, and related rhythm patterns, is explored at length below.

Time: Spectral Analysis

The role of time in Western musical contexts discussed here can, to a certain extent, be considered branches of African American music, or more specifically jazz. However,

> [i]t is unmistakable that the time concepts formulated (and practiced) by Lennie Tristano, George Russell, Leo Smith, and Anthony Braxton have their

[20] Audiation is essentially musical imagery in which all of the musician's musical parts interact experientially. Audiation is further dealt with throughout this study.
[21] The relationship between physical movement and specific rhythmic and musical elements is discussed in more detail below.
[22] What is considered as meter is discussed in greater detail below.

> equivalents (or, in many cases, precursors) in the development of European/American New Music (Wilson, 2000, p. 571).

To a certain extent, all time concepts build on previous time concepts from earlier musical periods, meaning the time concepts of the whole history of music have somewhat influenced current perceptions of time.

Perception, however, is subjective, and so it seems the role of time in music is a matter of opinion. The variety of opinions, including Braff's opinion, can be placed on a spectrum. One side has the opinion that all musical time is relatable and freely co-exists; the opposing opinion is of heavily regulated and measured time with well-defined and specific relationships of rhythmic elements. The artists considered here by Wilson have/had their own overarching musical time theories that fit on this spectrum.

Anthony Braxton composed music with the idea that all of his material could be performed simultaneously, and did perform different works simultaneously, meaning that no "hierarchy of a single pulse or meter" existed in his music (Wilson, 2000, p. 571). Similarly, George Russell composed works that had simultaneously occurring "rhythmic floors," vertical compositions in which "superimposition[s] of various temporal layers, [and] also a collage of various musical cultures" exist (p. 570). For Leo Smith, all possible interpretations of the current time are relevant and there is no development of time ideas within the space that time exists. The only determining factor of the dominant time of the moment is the strength with which an individual performer imposes their perception of time on the moment, causing reactions from other performers in the same moment (Ibid.). Jazz pianist Lennie Tristano created, with tape recordings, five "superimposed layers of structured time" over which he improvised (p. 569).

Where does Braff fit on the spectrum of time concepts? He believes that there is possibly an overarching 'theory of rhythm,' which includes a possible universal understanding of musical time, and probably universal rhythm based on the

vibrational properties of all things. Evidence of this is evident through his creation of his website: http://general-theory-of-rhythm.org/. Braff's music, although not dismissing any of the possibilities of the artists discussed here, has both very structured rhythmic and time elements, and completely freeing rhythmic and time elements. Precisely how he achieves this is examined throughout the remainder of this study. However, a generalised view of his concepts is helpful as a starting point for understanding his rhythmic concepts.

Braff's more recent music tends towards the use of a "hierarchy of a single pulse" structure, which is not restricted to a single meter.[23] This 'single pulse' is most simply conceptualised as a measure of time, which, in Braff's music, often is the length of a measure (bar), or half measure (half-bar) of music. The IOI (Inter Onset Interval) of this time-measure is usually, but not always, too long to be perceived as a single pulse in human perception, the limits of which will be discussed later.[24]

As we know, any measure of time can be rhythmically divided into a wide variety of equal, or uniformly unequal, segments in music. Any rhythmic division of that time-measure is considered by Braff to be a harmonic of that particular time-measure. These harmonics usually do not easily relate to one another musically. His rhythmic approach allows for a bending of the space-time perception, which can make any two harmonics relatable. His approach further allows a manipulation of the perception of the time-measure itself, by either increasing or decreasing the length of the IOI, thereby making any two musical time-measures relatable.

The perceptual bending of temporal-space occurs in Braff's music because two meters are being related to one another. The relating of these two meters results

---

[23] "Hierarchy of a single pulse" is Braff's terminology and this was how he explained the concept being discussed here on various occasions.

[24] The term 'IOI' is a relatively standard term used by the majority of rhythm theorists whose work I have read. Many of these resources are referenced in this study. IOI stands for Inter Onset Interval referring to the time interval perceived by a listener when presented with two or more stimuli (onsets).

in the audiation of a new kind of meter, which I have termed 'metric-bridges'. These metric-bridges are central to the Braffian approach and are discussed at length below. Through metric-bridges and related techniques Braff believes that a performer can relate any meter and temporal-space to any other.

Another way of considering the Braffian nuance to universal time and rhythm through metric-bridges is that rather than possibly performing all temporal-space perspectives simultaneously, one individual temporal-space perspective is assumed and the assumed perspective can be related to any other temporal-space perspective provided the performers have the skill to do so. Emphasis is on the individual's experience of the universe rather than a theoretical universal experience of everything. When relating temporal-space perspectives in Braff's manner, both the original temporal-space perspective and the perspective being related to can and often do co-exist simultaneously, allowing performers to move freely between the two perspectives. This further allows for the possibility of completely transitioning from one perspective to the other, seemingly effortlessly, in a manner not typically heard. Additionally, Braff sometimes deliberately throws himself out of an established temporal-space by assuming a related perspective and, at other times, deliberately plays outside of the established temporal-space. Related perspectives are created through re-interpreting established metric or rhythmic material like pulse grouping, wave (macrobeat) shape, measure lengths, and so on, discussed in detail below.

In terms of a temporal spectrum of opinions, Braff's approach appears to be located near the middle of the various opinions. His music makes an attempt at a balanced approach. It is situated somewhere between the metric rigidity found in the majority of conventional Western music, and the fluidity of equality between all possible temporal-space states occurring simultaneously, found in the music of Russell, Braxton, Smith, New Music, and so forth. As such, it is clear that his musical time concept is a product of the kinds of music discussed here, but it has its own individual stamp that separates it from the norm. This unique perspective,

as we shall see, allows for new ways of approaching rhythmic material, and new ways of interpreting existing rhythmic phenomena.

Empathy in the Performance Space: No Man is an Island

Musical motion has been discussed from various viewpoints by different theorists, as noted by Iyer (2002, pp. 393-394). Some of these viewpoints discuss this topic in terms of musical structure, specifically: form and pitch relationships. Particularly pertinent to this study are the discussions around musical motion as part of an ecological experience had *empathetically* by the performers and observers. At this level, "the listener does not merely hear the *sound* of a galloping horse or bowing violinist; rather, the listener hears a horse galloping and a violinist bowing" (Shove & Repp, 1995, p. 59, as quoted by Iyer (Ibid.)).

> We connect the perception of musical motion at the ecological level to human motion. This suggests that, at this level, musical perception involves an understanding of bodily motion— that is, a kind of *empathetic* embodied cognition (Ibid).

Musical perception, then, goes beyond being simply an auditory experience; observers often can and do have a physical and empathetic experience of what the performer is doing, especially when viewing a live performance since the observer can clearly perceive the sound source as coming from some kind of human motion in relation to an instrument. Justin London describes rhythmic perception as related to movement as follows:

> …rhythm signifies movement, but musical tones do not move. Rather, we hear a kind of virtual motion in a virtual, acousmatic space… it is precisely because our musical perception is parasitic on other modes of auditory perception that we hear movement in a rhythmic pattern, or a sense of distance and remoteness when a melody gets softer and softer (2012, p. 4).

Furthermore, when listeners metrically entrain to the music they hear, they "synchronize their perception and cognition with musical rhythms as they occur in

time" (Ibid.). Once a temporal pattern has been perceived in our environment, entrainment occurs in the listener, meaning the listener starts anticipating future temporal events based on previous temporal information.[25] "Additionally, metric entrainment occurs on a particular time scale, one that engages our sensorimotor system," provided the listener actively pays attention to the stimulus (London, 2012, p.9).

At an even deeper level, "[m]usical cognition is a kind of social cognition, involving the interplay of our perceptions of the music, our fellow listeners, and our fellow listeners' perceptions of both the music and us" (London, 2012, p. 59). Listening to music with others can affect us to the point where we actually perceive the music differently to how we would perceive it if we were listening alone. This is largely due to the human mirror neuron system allowing for "co-representation and sharing of a musical experience between agent and listener" (Ibid.).

These kinds of studies lend weight to Braff's theory of empathetic experience discussed in the first chapter. The level of empathetic experience in relation to different contexts still has to be explored, but it is plausible that observers who only experience music through listening have some level of empathetic experience as well. At the very least we, as humans, have a need "to match our temporal expectancies to when events are going to happen in our environment," which we do through our perception of sounds, sight, or any other means available to us (London, 2012, p. 9).

It is probable that an element of sonic identity is transmitted to the listener through the manner in which that performer moves to create sound. In other words, part of Braff's sonic persona is rooted purely in the manner in which he uses his body, and listeners who are familiar with his work could probably identify him partially through the sonic traces of his movements because these sonic traces are experienced empathetically, becoming familiar in feel. As we shall see, Braff is very particular

[25] Entrainment is also referred to as 'attunement' (Ibid.)

about how he uses his body to train his rhythmic abilities, emphasising the importance of the manner in which his sonic persona, that we perceive, has been created.

Labels of rhythmic elements, and more general musical elements defined in this study, take on a deeper meaning when viewed from an empathetic perspective since the labels do not only describe musical elements, but often also describe human experience inclusive of the experience of the performer/s and the observer/s. Rhythmically, these labels describe human motion at some level. Plausibly, tension and resolution in rhythm can be thought of as states of the body, or body parts, these states being variations of: muscular tension, movement towards rest or at rest. Musical labels, when discussing a particular performer, discuss an aspect of how that performer physically experiences music and their universe. In addition, the labels can describe how the observer experiences a performer empathetically and labels that performer according to the observer's own level of musical experience, bearing in mind the influence of the observer's experience of their universe. The level of audiational capability of all persons involved will, logically, play a role in what is experienced and labelled. Iyer's table below suggests possible ways in which musical elements are experienced empathetically (2002, p. 394):

TABLE 2
Embodied Correlates to Abstract Musical Perception

Abstract Music Perception	Ecological Music Perception
Sounds	Sound sources
Perception	Recognition
Abstraction	Embodiment
Music	Sonic trace of organized human activity
Rhythm	Human motion
Tempo	Speed of human motion
Meter	Regularity of human motion; an *invariant* of the musical environment
Expressive timing	Deviations from invariance
Polyrhythm	Coordinated contrasting human motions
Timbre	Specific instrument/voice/sound source
Loudness	Degree of effort, exertion; number of individuals in unison
Melody	Sustained vocalization, vocal cord use, lung exertion, control
Harmony	Polyphony, interacting sound sources
Form, recurrence, organization	Events, situational/environmental factors
Unison	Synchronized action
Compositional time, musical time	Real time
Piece of music/composition/score	Performance/event

Rhythmic Properties: And Around We Go

The manner in which we perceive meter based rhythm seems to have certain particular, and somewhat peculiar, properties. In his own way, Braff has described some of these properties. As mentioned in the previous chapter, Braff's mid-twenties to early thirties were seminal in forming his rhythmic approach. As mentioned, during this time he worked closely with musicians from the West African band Farafina and, in particular, with percussionist Yaya Ouattara. Rhythmic concepts learned during this time have later become Braff's personally more fully developed key concepts explored in this study.

Braff speaks of a specific rehearsal where he learned one such concept: There was much confusion when the Western musicians asked the African musicians to 'count in' the music so that the Westerners could determine the tempo and start together, as is common practice in jazz and popular music practice. At first, the African musicians counted "one, two three…" and started on the fourth pulse for a 4/4

piece, as if that fourth pulse was the first pulse according to Western music practice, but at a different tempo to the tempo inferred by the count. The next attempt had the correct tempo, but still started the piece on the fourth pulse as if that pulse were the first pulse of the measure. Eventually the Africans counted what was expected in the Western 'tradition' of counting in, giving the tempo and 'correct' starting pulse according to the Westerners' preference.

From this experience, Braff believes that for the Africans there was no mystery to rhythmic cycle, because for them rhythm is a cycle with an important macrobeat, within a larger cycle. He believes the rhythmic cycle itself tells these musicians where in the cycle they are, due to specific nuances of that cycle that they are able to perceive. This 'African' perception of macrobeats in a cycle is similar to how Western musicians would know where the measure line is if the harmonic rhythm aligns with the bar lines. At this point, Braff started seeing the layers of rhythm in groove based music as cycles. He had, until then it seems, perceived rhythm mainly as segmented and linear, most probably because of his Western training in the practice of writing music and rehearsing in sections (Interview 2: 3h5m53s).

Secondly, he had been thinking of the first pulse of the measure as a starting point, and this experience taught him that the Farafina musicians felt the beginning of the cycle was more a landing point than a starting point, a rhythmic resolution point, which is why they would count "one, two, three…" and start on "four" as if it was the first pulse of the cycle (Interview 2: 3h3min-3h7min). This kind of 'rhythmic resolution' approach to thinking about macrobeats, and rhythm in general, is not foreign to Western music. Berliner quotes Lary Gray, describing a general, conventional manner in which jazz bassists commonly approach playing walking bass-lines:

> 'You're always phrasing into downbeats.' In 4/4 time, for example, players tend not to think in terms of the grouping 'one, two, three, four' but in terms of the beat grouping 'two, three, four, one.' In this sense their lines are 'always moving ahead,' Gray says. 'Jazz is over-the-bar-line music' (1994, p. 317).

At this point, it seems Braff had become aware of, and made a conscious decision about, how he perceived and wanted to perceive macrobeat cycles. This conscious perception and decision is by no means new in musical traditions. It is shared by other musicians before him, most probably shared by many of the jazz musicians around him, even if unconsciously so, since it appears to be a fundamental part of the 'language' of the jazz tradition.

Added to the concept of forward motion in the macrobeat cycle, where a cycle of macrobeats determines a sense of resolution, is the notion of forward motion of microbeats resolving to the following macrobeat. Braff realised, from the same experience, that macrobeats can act as resolution points and that microbeats, acting in cycles, can resolve to the following macrobeat; therefore, microbeats are not always perceptually grouped with the previous macrobeat, as is graphically illustrated with Western notation. Grouping, as it turns out, is dependent on the rhythm pattern, as discussed by Gordon, but, generally, rhythmic resolution is to an upcoming macrobeat (2009, pp. 76-78). Braff had again stumbled upon a concept that previously existed outside of his conscious experience and framework, in a praxis unfamiliar to him, though perhaps subconsciously familiar through prior experience.

David McGill discusses Marcel Tabuteau's teaching methods designed to create forward motion in the performance of a classical performer. French born Tabuteau immigrated to America and became an influential performer and teacher. Many accomplished musicians learned from him and his approach is still taught today. Tabuteau's root concept deals with microbeats in the following manner: "The first note of the bar is the starting point. The remaining notes of each [macro]beat then lead forward to the next [macro]beat. The arrival of each [macro]beat is prepared" (p. 39). Tabuteau's concept is to lead to the next macrobeat, exactly the same as Braff's description of microbeat resolution to the macrobeat. The principle of creating a sense of musical forward motion lies in creating a feeling of leading towards a resolution point, rather than referencing a point in the past.

Gordon also believes that musical forward motion is created between macrobeats:

> [I]t is durations between macrobeats, specifically shorter ones that serve as anacruses… Specifically, it is anacruses between macrobeats and among rhythm patterns that are driving forces behind forward movement of musical phrasing. Upbeats lead to downbeats, expectation leads to arrival, tension leads to resolution, inhalation leads to exhalation, and flexion leads to extension (Ibid.).

Forward motion towards the macrobeat does not lead to accenting pulse (Gordon, 2009, pp. 58-59). Accenting is a different topic entirely. Braff learned how to manipulate the intensity of motion between macrobeats, being able to create the experience of levels of both forward and backward motion. He manages this through various specific manipulations of microbeat lengths, discussed below.[26]

Braff's third notion about rhythm, gained from the interactions with Farafina, is that the temporal resolutions can be conceived of as being circular and operating in interacting layers. The simplest layers are attentional points of macrobeats and microbeats, but can possibly include attentional cycles of measures and larger temporal structures. It seemed to him, rather accurately as shall be shown, that in human perception, multiple layers of rhythm cycle need to interact with one another to create a musical experience.

Whenever Braff's concepts are discussed it is important to remember that in his approach he places importance on cycle and resolution, as discussed here, as imperative to his concept of groove-based music, and especially with regard to his own music. Two other concepts that Braff gleaned from his experiences with the Farafina musicians, and later more fully developed himself, include concepts of altering swing percentage, or IOI's in microbeats, swinging microbeats other than

---

[26] In a recent conversation with Braff, we discussed how some 'backward' motion rhythmic patterns are perceived as 'taking off' from a previous macrobeat, rather than leading to an upcoming macrobeat (private communication, 2016).

only duplets in jazz, as well as the awareness of the relationship between rhythm and tonality, all discussed in more depth below.

Summary

We have seen that Braff's music can be likened to ritualistic music. Neither his music nor ritualistic music aims to create music for entertainment or art, in the Western sense of 'art.' His audience helps to create the 'sacred place' in which he can access 'sacred time' from a trance state, aligning his musical ideals with the ideals of ritualistic music. His music, especially his 'rhythm journeys,' aims to achieve a balance between narrative Western musical concepts and sound states found in ritualistic music, having elements of both. He aims to balance between the 'vertical' and 'horizontal' aspects of his music, which can be related to ritualistic and narrative elements respectively.

In Braff's music, his rhythmic approach alters temporal-space in a unique way that allows for an extended range of related rhythmic material. Temporal-space is an experiential perception of a space with measurable time points of attention; it is a perceived temporal invariant allowing directed attention, and the creation of rhythm patterns within the framework. Within a temporal-space, macrobeats are perceived as waves of both intention and perception shaped by that temporal-space. The ability to create a temporal-space is dependent on the past experiences of the individual.

Braff's music fits between the extremes of a spectrum where, on the one hand, any temporal-space can exist with any other, or on the other hand, where rhythmic elements have to relate to single temporal-space. In his approach, any temporal-space can be related to any other, but there is a well-defined and set path between two related temporal-spaces. It is through his rhythmic approach to altering temporal-spaces that he achieves the ability to relate any temporal-space to any other.

Evidently, there is some validity to Braff's theory of empathy with regard to the experience of the observer. Observers can physically experience what a performer is doing while engaging with a performance. Hearing rhythmic patterns engages our sensorimotor system, causing physical experiences. In addition, we perceive what our fellow observers in our environment perceive socially, further affecting our own perceptions of the music. At the root of perceived rhythmic source is a performer, who's sonic persona is defined partially by the way they physically move. Braff is particular about how he rhythmically trains through physical motions, meaning this aspect of his perceived sonic persona is not arbitrary. His physical approach is an important consideration when discussing how we perceive him rhythmically.

The final parts of understanding the more general elements of Braff's rhythmic approach as background for the remainder of this study are the root concepts from his interactions with Africans:

1. Macrobeats have a perceivable cycle.
2. The first macrobeat in a measure is a landing point rather than a starting point. Microbeats have a similar action of resolution to the upcoming macrobeat, where the macrobeat is the landing point.
3. Rhythmic cycles are circular with interactive layers. The interacting layers could include macrobeats, microbeats, measures, and possibly larger sections.

These concepts were later further developed, shown later in this study, but are still present and influential in his more contemporary music.

Chapter 3

Rhythmic Perception: Limits and Motions

Since Braff formulates and explains his concepts through a traditional Western method of rhythmic description and notation practice, well-defined Western rhythmic terminology can be used to describe his concepts. For this purpose, Gordon's book *Rhythm: Contrasting the Implications of Audiation and Notation* (2009) is useful. Justin London's book *Hearing in Time* (2012) is equally useful, especially with regard to cognition of meter and other rhythmic elements. The perceptual limits for human cognition of rhythmic material defined in this section will be used later to interrogate Braff's descriptions of his rhythmic approach. His musical performances will be similarly considered. The links discussed between rhythmic perception and bodily motions are further useful in discussing Braff's methods of training his rhythmic approach.

London draws on the history of cognition studies, particularly rhythmic cognition, including very recent studies, to create his theoretical framework. I believe London's view on human perception of rhythm relates to Gordon's work on audiation, especially considering one of London's central hypotheses that, "meter is related to, and may be a complex form of, entrainment behavior" (Ibid. p. 12). A clear picture of the processes and implications of Braff's rhythmic approach can be drawn by considering his work through London and Gordon's works.

Rhythm studies over approximately the last 100 years have attempted to define and classify the manners and limitations of how temporality is perceived in humans. By collating and analysing the data from these various studies, London has created some useful theories as to how we perceive temporality, specifically rhythmic temporality and meter (2012). Although, at this stage, it is impossible to be absolutely precise when discussing perceptual limitations, there are general trends

found in numerous studies, referred to by London, that are useful when considering rhythmic perception.

Human ability to synchronise with isochronous intervals has both upper and lower limits. Isochronous (occupying equal time durations) intervals and non-isochronous (occupying unequal time durations) intervals are carefully examined in, and central to, this study. “There is evidence that temporal, rhythmic, and grouping judgments and productions employ different modes of processing for times under roughly one half second than they do for longer times” (Iyer, 2002, p. 395 referencing Fraisse, 1956, pp. 29–30, cited in Clarke, 1999; Preusser, 1972; Michon, 1975). According to London, it seems that our most rapid synchronisation to short durations is around 100ms (600bpm) and, conversely, there is a least rapid limit around two seconds (30bpm) for synchronisation without a hierarchic organisation by the listener. This limit corresponds to the limitation on human echoic memory, also at two seconds.

However, if the listener does have organisational strategies, the least rapid limit extends to somewhere between four and six seconds (10bpm), probably due to listeners having the ability to organise the two second limit into groupings of either twos or threes. Furthermore, the most rapid macrobeat or tactus experience seems to be around 250ms (240bpm). The most comfortable rate for macrobeat perception centres around the range of 600ms (100bpm) or, more specifically, between the ranges of 500ms (83bpm) and 700ms (117bpm) (2012, pp. 25-31).

A further consideration is the proposed difference in the manner in which temporal information is processed around the threshold of 250ms. Some of these differences include “holistic versus analytic processing;” or the proposed limit to “short-term auditory memory;” or the point at which “auditory backward masking” stops occurring (London, 2012, p. 34). This processing limit seems to correspond to the limit of perceiving an isochronous interval as a macrobeat. More rapid time intervals can, therefore, seemingly only be perceived as microbeats of the macrobeat. London hypothesises that, in order for a macrobeat to be perceived, there has to be the

potential for at least one level of subdivision (therefore a potential for microbeats); this is his minimum requirement for perception of meter (p. 35).

Rhythmic Perception: Motions

Even more remarkable than the human ability to synchronise rhythmically, is our ability to perpetuate and predict rhythmic information unaided once we have synchronised to an external stimulus. The most plausible and seemingly preferred current theory is that rhythmic perception is strongly linked to motor perception within the body:

> Rhythm perception [can be] viewed as a form of covert synchronization, and it seems quite likely that [its] attentional dynamics… are closely linked to the motor system, with motor imagery or simulation of the sensory consequences of rhythmic action accompanying the bursts of attentional energy. If so, rhythm perception may simply be internalized sensory motor synchronization. (London, quoting Repp. p 32, brackets in original)

Additionally, motional information presents itself rhythmically through the actual motions that the musician creates when interacting with their instrument (Ibid.). Expanding further, recent research has shown that the same areas of the brain activate when perceiving and entraining to rhythmic information as when moving, even when the listener remains motionless (London, 2012, pp. 48-55). “In the sensorimotor perspective, a perceived rhythm is literally an imagined movement” (Iyer, p. 392 quoting Todd, 1999). Other research has shown that the activation of more peripheral systems like the vestibular system of the ear, essential to movement perception, affect how listeners interpret rhythmic stimuli, directly related to the manner in which this system is activated (London, Ibid.).

Iyer hypothesises about the parallels between normal, daily bodily motions and the timescales used in music pulses, demonstrated in his table below (2002, p. 393):

Musical Correlates to Bodily Motions

Body Motion	Musical Correlate	Approximate Frequency Range (Hz)
Breathing, moderate arm gesture, body sway	Musical phrase	0.1–1
Heartbeat, sucking, chewing, walking, sexual intercourse, head nod	Musical pulse (*tactus*)	1–3
Speech/lingual motion, hand gesture, digital motion	Smallest musically salient subdivisions of musical pulse; fast notated rhythms	3–10
Phoneme, rapid flam between fingers or limbs	Grace notes, deviations, asynchronies, microtiming	10–60

The limitations in audiation are, therefore, possibly due to physical limitations of being in a body; limitations that would differ between individuals, the same way that some people can run or breathe faster than others. The discrepancy between individuals falls within an average range of normal, human bodily motions. With contemporary science and theory both pointing to the importance of physical motion with regard to rhythmic perception, it is logical that how we utilise our bodies to train our rhythmic perception is hugely important.

Iyer states that musical cognition and perception can no longer be seen as purely analogous to mental processes involved with linguistics, reducing the musical cognitive processes to mainly "rational thought processes such as problem solving, deductive reasoning, and inference" (2002, p. 387). The musical mind seems to be situated within the entire body, and not just within the thought processing brain, particularly where rhythm and musical perception related to time are concerned. This view of the body/mind relationship has become known as "embodied or situated cognition," where cognition happens as a result of the experience/s had with the body within its environment (pp. 388-389). This would mean that rhythmic audiation is reliant on memory of prior spatial-temporal experiences within the body to create foundations that musical activity can draw on. It further implies that the

musical, temporal-space experience changes when different memories of spatial-temporal body motions are used in audiation.

Musical Perception: Harhythmanizing?

Braff personally believes it is highly likely that rhythm and tonality essentially have the same set of rules operating over different time scales. He theorises about the possibility that harmonic rules can be applied to the realm of rhythm and the specifics of how this would work. Essentially, the concept grew from a musicology lecture that Braff attended while studying. In this lecture he learned that around 16Hz we cognitively experience a change between rhythm and pitch where slower frequencies are heard as rhythm and faster frequencies are heard as pitch (Interview 2: 3h14m53s). Braff also recalls Indian theories that related the speed of planetary movement to frequency, and therefore relatable to musical pitch, as being influential on his thinking around musical frequencies. These Indian musicians tune their drones according to the pitch of the planetary movement. Braff believes that functionality in rhythm can be considered in the same manner as functionality in harmony when both are considered simply by their frequency related natures and relationships. Again, Braff's tendency towards, and interest in, universal concepts is revealed.

Braff's theory considers harmonic structures that have a tonal root or tonic and partials relating to that root. These partials are tempered in our musical tuning to allow more relationships between different tonics. A tonic has a set pitch; that pitch has a set length of time between individual waves. Partials relate to the tonic in a set ratio, 2:1, 3:1, 4:1 and so forth, with 1 being the tonic and the other numeral being the partial. The pitch is altered, becoming higher or lower, when the wavelength of the tonic is altered, becoming longer or shorter, meaning that the partials relating to a specific tonic will be altered to match that tonic. Partials allow us to construct chords that we find pleasing and harmonious.

In Braff's theory, the time between macrobeats or measure lines can also be viewed as a wavelength; meaning that, rhythmically, these could be considered the rhythmic

tonic. Shorter time values related to such a rhythmic tonic in exact integer ratios can be considered partials of that rhythmic tonic. Therefore, if the tonic is a macrobeat, duplets would be the first partial, triplets the second, quadruplets the third and so on.

When musicians attempt to play together, with each musician perceiving a different rhythmic tonic, difficulties seem to arise. This is most likely due to possible rhythmic partials not being closely related enough, even when, as in the example below, the rhythmic tonics seem very closely related. This can be likened to two musicians attempting to perform together with the one hearing C as the tonic of the key and the other G as the tonic. Initially, these notes sound good together; however, as soon as the various harmonies of these keys, and the tension and resolution tendencies are considered, it becomes clear that certain difficulties will arise when attempting to create a cohesive whole together.

Braff ran into this kind of rhythmic difficulty when working with drummer Julio Barreto in his TNT band. In this instance, described by Braff, he and Barreto interpreted the rhythmic root of a particular piece differently. Barreto heard rhythmic root in 7/4 where quarter notes were felt as the macrobeats; Braff heard the piece in 7/8 where the macrobeats were considered to be four eighth-notes and three eighth-notes in length respectively. As a result, the rhythmic partials that both musicians related to their fundamental macrobeats were vastly different. Braff overcame this difficulty by practising altering his perception of what he heard from Barreto, effectively not letting Barreto's rhythmic partials interfere with his audiation of macrobeat structure. Rather, he included Barreto's rhythmic partials in his own possible partials (Interview 2: 3h21m).

Braff's view of rhythm as a tonic with partials, if correct, has implications on what could help musicians rhythmically interlock and interact when performing together, implications that are beyond the scope of this work. The concept of rhythmic partials heavily influences how Braff approaches composing exercises and pieces for

performance. He considers the rhythmic implications and connection from the perspective of his theory when generating ideas for his works.

Musical Perception: Tonality and Meter

The relationship between tonality and meter has proved highly significant for the development of Braff's rhythmic approach. Gordon believes tonality is perceived through recognition and organisation of essential pitches in tonal patterns (2009, pp. 26-28), and, for both Gordon and London, meter is perceived through recognition and organisation of essential rhythm patterns and durations. These processes can, logically, occur on their own; i.e. meter can be established without tonal elements and vice versa. London notes that there is evidence that meter works largely independently of tonality, despite some significant interactions between pitch and rhythm, since rhythm and meter seem to operate perceptually prior to tonality (2012, p. 199). Gordon points out that rhythmic and tonal parts of perception in audiation are interactive when both meter and tonality are present in the music. "Rhythm patterns assist in organizing tonal patterns in music…" (p. 32).

In Braff's opinion, this is only true in this particular manner for cultures using Western harmonic and rhythmic foundations to create the music. He suggests, because of his experiences, that much African music does not use tonality in this manner, and that the Indian musicians he worked with did not use tonality in this manner either. Braff refers to the West-African pop music that Ouattara listened to where the chords played on chordal instruments were often merely sounds used rhythmically and, to a Western trained ear, there was no clear tonality or tonal relationship between these chords. The Indian musicians Braff worked with used scales, but did not resolve their melodic lines according to Braff's perception and expectation of tension and resolution based in his tonal perspective (Interview 2: 2h58m-3h2m; personal communication, Jan 2015). He therefore believes that their sense of tension and resolution with regard to pitch or, in other words, their sense of tonality, is not the same as the Western sense. This implies that the Indian musicians

Braff refers to have a different perception of how pitch relates to rhythmic material as well.

I believe it was a combination of a lack of context and the specific relationship between the perceptions of tonality and meter that were at the root of the difficulties Braff refers to when speaking about his experiences with African melodies. Braff's theories around what he calls the "tonal ear" resulted largely because of his interaction with West African percussionist Yaya Ouattara and the other musicians from the previously discussed band Farafina (Interview 1: 1h8m).

Braff often copied traditional melodies introduced to him by Ouattara and sometimes incorporated them in the performances of the Blue Note quintet as whole pieces. While touring in Burkina Faso, Ouattara pointed out the same melodies performed by the band as performed traditionally when they happened upon some local musicians performing them. Braff initially did not recognise the melodies since he and his band had been performing these same melodies "half a pulse [macrobeat] late!" (Interview 2: 2h58m), compared to the local musicians' performance. Braff, then, had learned the melodies out of their context, leading to the misinterpretation of what the accompanying metric structure should be.

Determined to understand the reason behind hearing the melodies in the wrong place, Braff relearned the melodies with the traditional musicians' macrobeat placement. He found the task enormously difficult and realised that he still had the tendency to hear other, similar traditional West African melodies incorrectly at first. London believes that a perceiver self-generates a metric schema by extrapolation through temporally attending to either "a local invariant or a characteristic rhythmic figure that implies a particular metric schema" (2012, p. 13). Once created, the "metric schema" is used by the listener to interpret the rhythmic information they are presented with. London further shows that without some clear metric indication, often indicated by the placement of harmonic structures or preceding melodic material to give context, a melodic passage can often be "metrically neutral," meaning the context of the passage determines the interpretation and audiation of

the passage, as demonstrated by London (2012, pp. 13-14). Ultimately, Braff realised that his perceptions of tonality and meter influenced one another, creating the difficulties described here. He theorised that Western music requires performers of Western music to hear in this manner, which appears to be what Gordon and London are pointing to in their descriptions of the initial steps of audiation discussed below.

Overall, the experiences with the music of non-Western cultures are largely what drove Braff to experiment with his own perceptions of rhythm and tonality. Part of his motivation behind attempting to disassociate his perceptions of tonality and meter was because he recognised differences between cultures and their approaches to rhythm and tonality. Through rigorous work, he became skilled at disassociating his perception of tonality versus meter, but found he could not truly separate the two in his perception. His work towards separating these perceptions has since influenced how and what he performs. He has applied his skills to various contexts, including jazz standards and jazz performances and, more recently, to his own compositions that allow him to expand upon his skills and theories.

Through his self-experimentation, Braff shows his searching and pioneering nature. His music is exploratory, more securely placing him in a category of musicians that do not aim to perpetuate, glorify, recreate or consciously extend any specific musical tradition. He prefers, instead, to learn from many traditions, as described above. In this way, Braff again demonstrates that creating music, for him, is not about creating a 'pure art form,' since he feels connected to many cultures and traditions, but specifically belongs to none.

Musical Perception: Challenging the Limits

Being rhythmically and harmonically inclined, as his history demonstrates, it was, and is, natural for Braff to combine his concepts of rhythm with his approach to harmony. As discussed, Braff looked mainly for ways to dissociate his perception of rhythm from his perception of tonality. Through his experimentation he realised that

he could ‘stretch’ his perceptual link between these two major parts of his musical audiation.

One example Braff gives is an approach he developed to playing the jazz standard “All The Things You Are.” He practised changing his perception of the piece from having four macrobeats per measure, to having five macrobeats per measure, while maintaining the original macrobeat length and harmonic rhythm. His fellow musicians would perform and audiate the piece normally while he experienced the piece in a different meter with harmonic resolutions not matching his perceived measure lines, being the usual rhythmic resolutions. This, in turn, meant that he could play rhythmic material in his improvisation related to his five macrobeat measure and not the normal four macrobeat measure that the rest of the band were playing. This approach rhythmically influenced his phrasing, allowing for his perception of rhythmic material not associated with the normal four-macrobeat measure. Tonally, there was always a link maintained to the original structure kept by the other performers (Personal communication, Jan 2015).

Braff has additionally experimented with speeding up his harmonic rhythm by removing a microbeat to each macrobeat for a measure or more in his audiation, and then adding two microbeats to each macrobeat for a measure or more until he once again matches the original composition’s harmonic structure, and similar additive and reductive strategies for application in his improvisation. The two rhythmic concepts discussed here have not been as extensively used in Braff’s rhythmic approach, and appear to have been attempted and shared with me out of experimental interest.

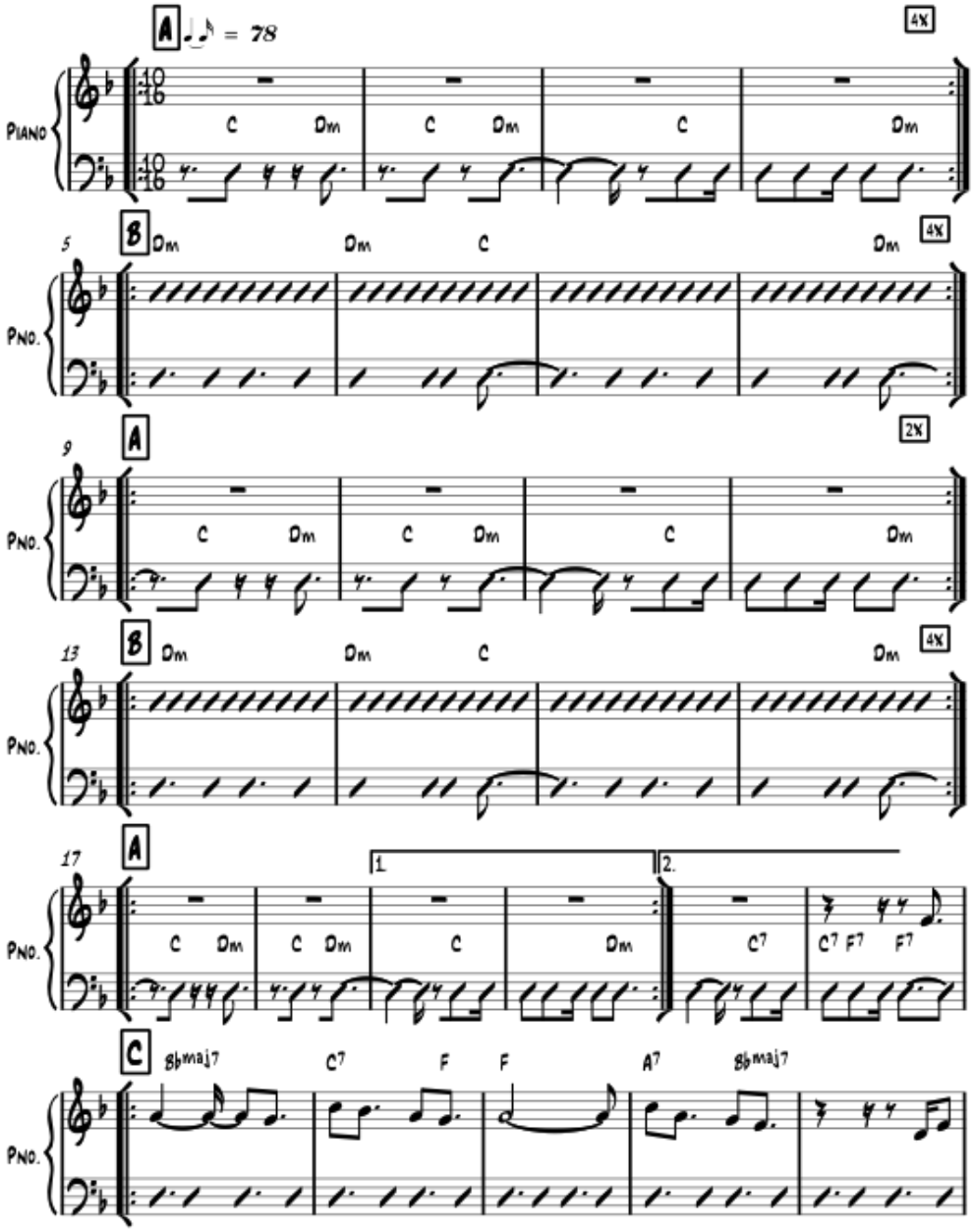
Another strategy that has seen more use in Braff’s compositions is that of anticipating the upcoming harmony. This is a relatively common musical tool seen extensively in jazz comping, horn section stabs, altering melodic material, and so forth, as a way to create forward the perception of motion. Usually, this approach is applied to the last microbeat of the macrobeat preceding the harmonic change, and in jazz is often on the last eighth-note duplet or eighth-note triplet of a macrobeat.

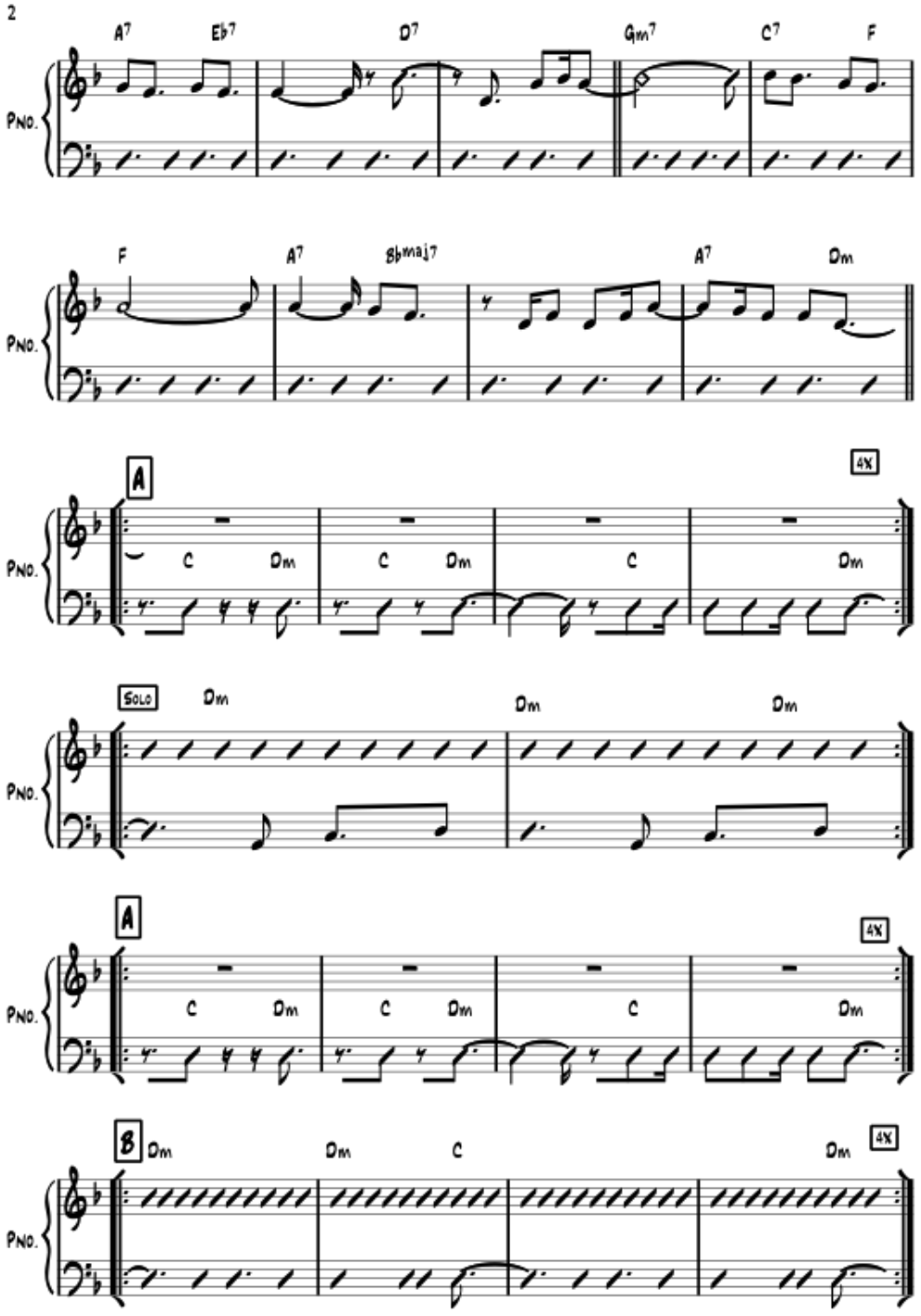
However, Braff extends this concept by applying it to the second last eighth-note triplet, or the second or third last quintuplet of a macrobeat, applying this concept of anticipated harmony as far as the onset of the macrobeat before the actual macrobeat on which the harmony normally would change. Braff's binary composition "Berimbau" is a prime example of this (Braff M. , Inside, 2011). To the uninformed listener, this composition sounds like it harmonically resolves on the first microbeat of the macrobeat in this quintuple paired usual meter of 10/8. However, the rhythm pattern performed by the drummer is, in fact, a (L)-(S)-(L) (Long, Short, Long) (2:1:2) quintuplet pattern and, harmonically, the resolution to the tonic in this instance happens on the third last quintuplet of the macrobeat each time in the 'A' section, with the remainder of the 'A' section phrases landing on either the second last or last quintuplets.[27]

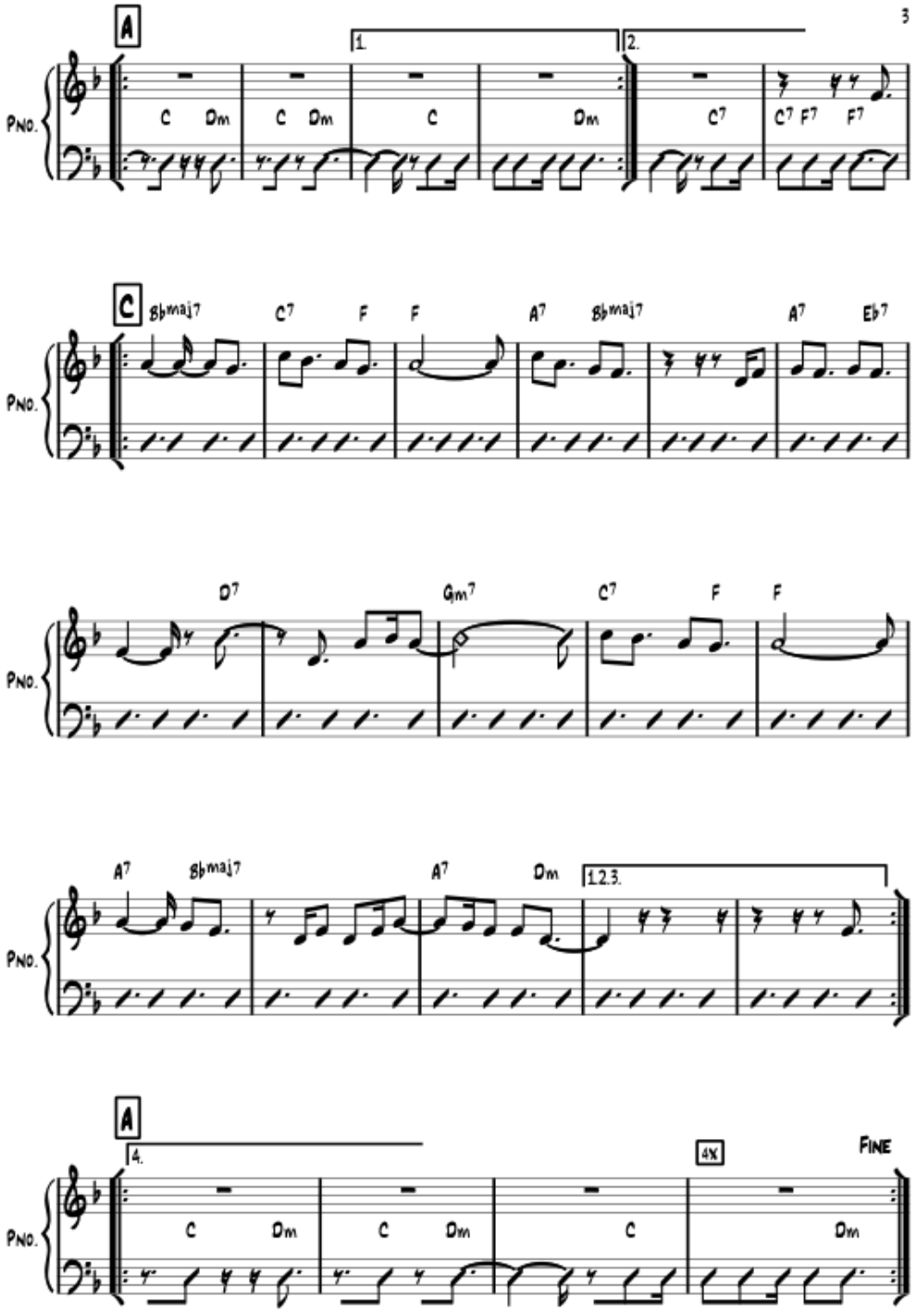
[27] Patterning of this kind, and Braff's use of quintuplets, are dealt with in detail later.

BERIMBAU

MALCOLM BRAFF




2
A7
Eb7
D7
Gm7
C7
F
PNO.
F
A7
Bbmaj7
A7
Dm
A
4X
C
Dm
Solo
Dm
B



The result of this melodic anticipation is confusing and disturbing, and I have found it necessary to actively concentrate on the pulse feeling to not re-interpret the macrobeat placement incorrectly. The 'B' section of this piece releases this particular tension by matching the macrobeat and harmonic placements, though Braff tends to

use the anticipation tool in his phrases here from time to time as well. These techniques used by Braff show, more deeply, how he, quite successfully, stretches outside of the boundaries of his surrounding musical traditions, always searching, and not being loyally rooted.

Summary

In this chapter, a broad framework for interrogating Braff's music and rhythmic approach has been constructed through discussing the workings of musical perception. The various perceptual parts of the framework include:

- Meter as a complex form of entrainment behaviour;
- 100ms (600bpm) limit for shortest durational synchronisation;
- 2 sec (30bpm) for the least rapid synchronisation;
- 4-6 sec (10bpm) for the least rapid limit with organisational strategies;
- The most rapid macrobeat perception at 250ms (240bpm);
- The most comfortable range of macrobeat perception is between 500ms (83bpm) and 700ms (117bpm);
- Anything more rapid than 250ms can only be perceived as microbeats or divisions of microbeats;
- Macrobeats require at least the potential for division into duplet microbeats in order to be perceived as macrobeats.

We have seen that musical perception is an embodied experience. Rhythmic perception seems to be closely linked to our motor system as an internalised, sensory motor synchronisation. Perception of rhythm has been shown to activate the same parts of the brain as movement perception. Both of these points highlight the importance of considering the role of movement in rhythmic training and rhythmic perception. It is likely that rhythmic perceptual limits are linked to our physical limitations regarding the possible movements we could experience. As shown later, nothing in Braff's rhythmic approach, including practical results or training methods, goes beyond the range of possible movement experiences.

In the last section, I have discussed two of Braff's major beliefs that inform the manner of his music making. The first, particularly impacting his compositional process, is his theory around the similarities of tonal relationships compared with rhythmic relationships. His belief stems from his understanding that both are frequency ranges of perception. Harmonic structures have a tonal root and rhythmic structures have a time period that functions rhythmically as a tonal root, equal to either a macrobeat or a measure. The partials of either rhythmic or tonal tonics appear as integer ratios with the tonic as 1, and the partial as 2 or some higher integer value. Difficulties seem to arise when musicians attempt to perform with differing rhythmic tonics that have unrelated partials. Braff is very particular about how he composes because of his experiences of these difficulties. He considers his compositions as having rhythmic roots, and what rhythmic possibilities those rhythmic roots generate.

Braff's second belief has majorly impacted his musical experimentation. We have seen that tonal and rhythmic perceptions appear to be linked in Western music. Braff unsuccessfully attempted to disassociate these two perceptions because of his experiences of African and Indian music. Two of his experimental techniques included: temporally restructuring the measures metrically while maintaining the original harmonic temporal structure of a composition; and temporarily altering the macrobeat length, either shortening or lengthening the macrobeat by a set microbeat amount, and reversing the change later to return to the original compositional structure. His most used experimental concept employs the use of harmonic anticipation and delay, more particularly, harmonic anticipation.

The two beliefs discussed demonstrate, more deeply, Braff's pioneering and exploratory nature. The level of his dedication to doing things his own way becomes more apparent, as well as his unwillingness to follow a set tradition, as discussed before. It is becoming clear, and will continue to do so throughout this study, how he attempts to stretch beyond the norms of the traditions that are most familiar to him.

Chapter 4

Macrobeats, Microbeats, Rhythm Patterns

Gordon defines three elements constituting rhythm: rhythm patterns, microbeats and macrobeats:

> Rhythm patterns establish rhythm of a melody or text. Microbeats establish meter and form the basis of rhythm context, and macrobeats establish tempo. In audiation, rhythm patterns are superimposed on microbeats, and microbeats are superimposed on macrobeats. All three elements are audiated concurrently, as if all are functioning in circular space to establish rhythm context (2009, pp. 31-32).

Similarly, London believes "it is useful (and perhaps necessary) for the perceiver to establish a self-generated ground against which the continuing temporal patterns may be discerned" (2012, p. 13). Concurrently audiated macrobeats and microbeats, create this "self-generated ground", or possibly temporal-space (if nuanced), according to which rhythm patterns can be discerned and audiated. However, London argues that metric organisation requires at least two layers, preferably three layers, to establish meter. The minimum two layers for London are either tactus (macrobeat) and measure, or tactus and subdivision (microbeat). Rhythm patterns are heard within the context of this attentional framework. This framework can only exist within the previously discussed boundaries of human perceptual limitations.

Gordon's terminology is useful for the description of rhythmic elements because his terms are specific and precise. Without macrobeats "no sense of meter is possible" (London, 2012, p. 15). Macrobeats, when "coordinated with [at least] one other level of organization," allow for entrainment and establish meter (London, 2012, pp. 22, 16). Microbeats are the first grouped layer perceived as dividing the macrobeats.

Microbeats can be further divided and these divisions are referred to as divisions of microbeats.

Macrobeats: Generally Speaking

Braff's macrobeats, and macrobeats in general, can be isochronous or non-isochronous. Normally, non-isochronous macrobeats are constructed from isochronous microbeats grouped in differing quantities from macrobeat to macrobeat, where isochronous macrobeats have the same number of microbeats in each macrobeat.[28] Non-isochronous macrobeats always form part of what Gordon terms as "unusual meters", and isochronous macrobeats always form part of "usual meters". "Unusual meter is determined by how macrobeats are grouped in a rhythm pattern, and it is the number and relative lengths of macrobeats in a grouping that determine which type of unusual meter is being audiated" (Gordon, 2009, p. 46). Once again, perceptual constraints play a role, since there is a clear range in which macrobeats can be audiated as macrobeats, mentioned before.

Gordon believes that "it is quite uncommon for sequence of macrobeats of different lengths to remain consistent from beginning to end in music in unusual meter" (p. 47). Braff's approach to unusual meters is opposite to Gordon's, but does not exclude the possibility of Gordon's theory of audiating unusual meters. For his own compositions, Braff approaches learning to audiate over an unusual meter by first deciding how he will group the microbeats into macrobeats. The macrobeats and their relative lengths and positions remain constant within the unchanging measure. Regardless of the rhythm patterns imposed, he often audiates approximately the same macrobeat length for an entire composition, especially if the measure signature does not change. Sometimes he composes an ostinato figure that outlines the macrobeat placement, for instance: the left hand pattern of "Mantra" (Braff M. , Inside, 2011).

[28] An exception to this statement is when non-isochronous microbeats create macrobeats, discussed in more depth below with regard to metric-bridges.

The macrobeat lengths in Braff's compositions, analysed in this study, do not generally stay within the range of perceptually comfortable, as described above, often requiring audiation of macrobeat lengths longer than 83bpm. For example, "Empathy for the Devil," which is in a usual meter has macrobeats around 75bpm, "Dance of the Planets" also in a usual meter has macrobeats around 70bpm, "Mantra," in an unusual meter, has two macrobeats per measure, the first of around 78bpm and the second around 104bpm. However, these ranges are not far outside the comfortable ranges of macrobeat perception and are in the possible range. For trained musicians it is very plausible to audiate the meters of Braff's compositions within the pulse rate ranges that he uses in the manner he describes, i.e. with microbeat divisions of macrobeats other than duplets or triplets.

Braff's sonic persona is primarily rooted in an experiential emphasis of a strong pulse feeling within himself while creating metrically based music. He dances, swaying in the chair, or stamps both feet, or plays a hi-hat with one foot, whilst training at the piano, as well as in concert, to maintain this pulse feeling. These motions are consciously linked to how he experiences, and what he wants to experience, as the macrobeat of the moment. Perceptually, these walking and swaying motions will trigger audiational responses, including inner ear and other sensorimotor responses, as discussed before.

Braff does not limit his rhythmic training to the piano. He often works out new material behind the drum kit, where the kick drum will mostly be utilised as the pulse sound and experience, and sometimes he works behind his balafon. He often uses the normal motions of walking or stepping to train his rhythmic ideas, and has even actively danced in clubs, stepping to the obvious macrobeat pulse as a place and way to train his ideas.

Braff consciously practises feeling the macrobeats while playing various rhythm patterns, especially patterns that displace over the macrobeats, until he is able to freely play and improvise rhythm patterns that meet the macrobeat groupings as

well as rhythm patterns that do not.[29] He uses the same approach when practising usual meters. He does, at times, reinterpret the way the meter is grouped into macrobeats, therefore how he feels the pulses; however, he considers this a kind of metric modulation. He particularly likes to use this kind of rhythmic technique when creating a 'rhythm journey' type composition like "Goodmorning Sincity" explored in more depth below.

Macrobeats: Non-isochronous Conditional Love

Braff likes to consider non-isochronous macrobeats as either long (L) or short (S). He places the limitation that the (S) macrobeat is > $^{1/2}$ the (L) macrobeat. The (L) to (S) relationship between macrobeats is maintained when "morphing" from one measure signature to another.[30] For example, in "Mantra" seven microbeats are divided into two macrobeats per measure.[31] The first macrobeat is a quadruplet group and the second is a triplet group. Through morphing, Braff arrives in a measure with 11 microbeats again with two macrobeats. This time, the first macrobeat has six microbeats and the second has five. He then further morphs the 11 into a measure with 15 microbeats that can be grouped as two macrobeats, the first consisting of octuplets and the second consisting of sextuplets (Braff M. , Inside, 2011, pp. 3m59s-4m6s). In all of these meter changes the measure length stays approximately the same (allowing for human error), but the temporal-space within the measure changes.

The various meters of "Mantra" can be described arbitrarily as 7/8, 11/8 and 15/8.[32] These three meters all have two macrobeats and the relationship between the macrobeats is (L) to (S) within the limitations of the ratio of 2:1 respectively. The ratio with each change moves closer to 1:1 with the 7/8 having the ratio of 4:3, the 11/8 having the ratio of 6:5 and the 15/8 having the ratio of 8:7. Therefore, not only

[29] Displacement is explored in more depth below.

[30] Morphing is Braff's term for a form of metric transfiguration described below.

[31] Macrobeats can have more than two or three microbeats discussed in more depth below.

[32] 7/4,11/4 and 15/4 could easily also be used, as could 7/16, 11/16 and 15/16 or any related meter signatures.

is the temporal space within the measure changing, but so is the ratio between macrobeats.

Macrobeats: Transfiguration

These changes can be considered what Gordon defines as "transfigurations" because both the temporal-space and ratios between the macrobeats are changing, but the overall measure length remains constant (2009, pp. 139-140). Strictly speaking, Gordon's definition of transfiguration requires that either fewer or more macrobeats are audiated over a set amount of time, like a single measure, or macrobeat. For Gordon "transfiguration" is the only exception where the number and lengths of macrobeats/microbeats may change, but tempo does not necessarily change (Gordon, 2009, pp. 139-140).

> When two underlying macrobeats are audiated in place of one expected underlying macrobeat, … the two macrobeats are called transfigured… Another form of transfiguration occurs when fewer macrobeats are audiated, such as when a quarter note triplet is written with the measure signature 2/4 and only one underlying macrobeat is audiated (Ibid).

When a measure is transfigured so that more macrobeats occur than before, the greater number of macrobeats must fit exactly into the original, fewer number of macrobeats to be considered transfiguration. The converse is true when transfiguring a measure to include fewer macrobeats. For transfiguration to take place, at the very least, measure-lines need to remain as attentional peaks, even if these peaks are re-interpreted as macrobeats. Again, perceptual limitations have to be considered for possible metric transfigurations.

A special case of transfiguration needs to be added to adequately describe Braff's rhythmic audiation: When the number of macrobeats in a measure and the measure-lines remain constant, but the ratio between the macrobeats gradually shifts, transfiguration has occurred.

In the case of "Mantra" described above, two macrobeats are audiated in the place of two macrobeats, over a set time, being the measure. The key difference is that the space in the measure is changing while the measure length remains constant. This means that the ratios between the macrobeats gradually changing can be considered transfigurational, and will also be considered transfigurational, for the duration of this study. It is necessary to assume that it is possible to audiate quadruplets, quintuplets, sextuplets, septuplets, and so forth, as single macrobeats for transfiguration of this kind to be valid.[33]

Two conditions make this kind of audiational change truly transfigurational: firstly, the relationship of macrobeats in terms of (L) versus (S) remains and the positions of macrobeats remains constant within the measure; secondly, the ratio changes of (L) to (S) macrobeats remain within the limitations that (S) > $^{1/2}$ (L). Ultimately, transfiguration happens when the musical space gradually shifts. Temporary transfiguration will be largely subjective within reason, much like tonal modulation can be considered false, within reason, if the new tonality is not maintained for long enough before returning to the original tonality.

Microbeats: What is Perceptually Possible?

Microbeats create what London refers to as the "metric foreground" (2012, p. 98). If macrobeats are considered to be the waves of time discussed before, then microbeats are the surface of these temporal waves, defining and giving shape to the waves. Microbeats have "an equally significant import on our metrical attending, and hence the meaning and motional qualities of a musical gesture," as macrobeats or any other periodicity in the music (Ibid.).

There appear to be limits to what can be considered a microbeat grouping of a macrobeat:

[33] Audiation of macrobeats with these divisions is discussed below.

> Regardless of whether they are superimposed on an underlying macrobeat, microbeat, a division of a microbeat, or a division of a division of a microbeat, four durations in a grouping seem to be the audiation limit (Gordon, 2009, p. 42).

It seems generally accepted that a macrobeat can be subdivided into either two or three microbeats (duplets or triplets), though clearly Gordon believes that four microbeats (quadruplets) as a single entity are also possible. There are various approaches to further dividing a macrobeat into more durations, i.e. quintuplets, sextuplet, septuplets, etc. According to Gordon, quintuplets are usually audiated as two unequal macrobeats within the original single macrobeat, with two notes of the quintuplet making one macrobeat and the remaining three notes making the other. Similarly, septuplets can be made up of three macrobeats made up of two macrobeats with two notes of the septuplet each and the remaining three notes making the other macrobeat. Sextuplets are usually considered divisions of microbeats, either divisions of two if the macrobeat is divided into triplets, or divisions of three if the macrobeat is divided into duplets (Gordon, 2009, pp. 134-135). It is somewhat common in Western repertoire to find quintuplets, sextuplets, septuplets, and so forth, written over one macrobeat, sometimes even across multiple macrobeats.

How Braff deals with various microbeat groupings is different to what is described here as typical Western praxis. In his approach, quintuplets can be utilised as part of the basic microbeat grid, therefore, as an integral part of the meter and temporal-space on which a composition is built. This is similar for sextuplets and septuplets and possibly other microbeat groupings. Gordon expresses the possibility of musicians being able to audiate “an unusual unpaired rhythm pattern as if it includes only one macrobeat, thus giving rise to a subjective type of meter as of yet unidentified” (Gordon, 2009, p. 60). London makes provision for meters of this kind believing that meters do not have to be only duplet or triplet based (2012, p. 125).

Braff recalls that the Indian musicians he interacted with claimed that it is humanly possible to audiate up to nine microbeats to a single macrobeat without divisions.[34] However, as London points out, macrobeats with seven or more microbeats become problematic since the duration of the macrobeat approaches the perceptual limitations discussed earlier, where the IOI's of the microbeats need to be short, around 150ms or less (2012, pp. 133-134). These meters are logically rarer because they have a narrower range of perceptual possibility for being comfortably audiated. Outside of the plausible perceptual range for these meters, microbeats can easily be audiationally reinterpreted into different macrobeats, which is commonplace. I believe these reasons lead to generalised rules, such as only two and three microbeats per macrobeat being possible.

It seems that in order to perform some of Braff's compositions, a musician *has* to audiate usual meter macrobeats with quintuplet microbeats on which rhythm patterns can be superimposed. Braff describes his rhythmic process as requiring this audiational skill. Some examples of such compositions include: "Empathy for the Devil", "Berimbau" and "Dance of the Fireflies" (Braff M. , Inside, 2011).[35] However, what actually metrically occurs in these compositions is a type of meter not yet classified, as I demonstrate below. Braff's other compositions require audiation of septuplets as the microbeats on which patterns can be superimposed like "Dance of the Planets" (Ibid.). Some of his compositions require the ability to audiate unusual meters where the macrobeats are divided into sextuples and quintuplets at times, or quadruplets in conjunction with triplets at other times, for instance "Mantra" and "Crimson Waves" (Ibid.).

"Mantra" can be described as transfiguring between three meters: one with seven microbeats per measure, one with 11 microbeats per measure and one with 15

---

[34] In my own training I have learned to audiate five notes or quintuplets to a pulse convincingly, without dividing the pulse into groups of two and three microbeats, therefore, truly feeling all five notes as a single group. I believe I am currently well on the way to being able to audiate sextuplets and septuplets the same way.

[35] Meters, including usual meters are further discussed below.

microbeats per measure. The seven microbeat and 15 microbeat measures are audiated with macrobeats consisting of triplets and quadruplets, and the 11 microbeat measures are audiated with macrobeats of quintuplets and sextuplets. The majority of "Mantra" is performed with either 11 isochronous microbeats to a measure or seven non-isochronous microbeats to a measure with rapid changes between these modes of audiation. Fifteen microbeats to the measure occur between 3min59sec to 4min6sec and seven isochronous microbeats to the measure can be heard between 5min59sec to 6min25sec.

In order to perform the transfiguration, what Braff calls "morphing," from 11/8 to 15/8 described above, Braff first practised metrically transfiguring the 11/8 with two macrobeats, with a microbeat ratio of 6:5, to an 11/8 with four macrobeats, with the microbeat ratio of 3:3:3:2, therefore transfiguring the 11/8 in his audiation. Through further transfiguring, the microbeat ratios of the four macrobeat 11/8 becomes a four macrobeat 15/8 with the microbeat ratio of 4:4:4:3. In the latter transfiguration the macrobeats gradually shift, maintaining the (L) to (S) relationships described above. Measure length remains more or less constant, allowing for human error. This kind of transfiguration seems to be unique to Braff and is explored in great detail below.

With practise, the 15/8 can possibly be audiated as only two macrobeats with the microbeat ratio of 8:7. Eventually, with continued practising, a direct modulation from a two macrobeat 11/8 to a two macrobeat 15/8 is possible. Regardless of whether the performer is audiating four macrobeats to a measure or two, the observer could be grouping the microbeats into macrobeat lengths different from the performer, based on the observer's audiational skill. The observer would technically hear the music transfigured rhythmically from the performer if he/she is audiating a different pulse length to the performer. In this case, the overall temporal space of the measure remains the same, allowing for this discrepancy in interpretation.

Microbeats: Non-Isochronous Considerations

A recent study confirmed "that rapid uneven rhythms can be produced without mental subdivision, both with and without pacing stimulus, but only with substantial enhancement of the contrast between long and short intervals" (London, 2012, p. 112). In other words, humans have the ability to audiate short non-isochronous durations. These short durations can be utilised as the microbeat level of a meter. I believe that this ability is one way in which humans nuance the meter in temporal space, arguably for expressive reasons. Non-isochronous microbeats will typically be in a constant ratio of (L) to (S). Like isochronous microbeats, the (S) microbeat cannot be shorter than 100ms according to perceptual limitations. The substantial contrast London refers to here falls within the range of 1(duration)<(S)<(L)≤2(durations). Braff places the exact same limitation on his non-isochronous microbeats in his rhythmic approach, as discussed further below. "I reduce my choice to patterns proposing a ratio between long notes and short notes that is 2:1" (Interview 1: 7m15s).

The core of Braff's concept is centred on manipulating the temporal ratios between isochronous microbeats, resulting in various kinds of non-isochronous microbeats. Braff is well aware that different cultures utilise non-isochronous microbeats. For instance, he knows that Brazilians' quadruplets are specifically non-isochronous, that Africans, from West Africa in particular, have multiple kinds of non-isochronous duplets and triplets expressing emotional associations within the music and, of course, that jazz has its versions of non-isochronous eighth-notes, or duplets, referred to as 'swinging eighth-notes.' He has observed how, from his interpretation, folk Indian musicians have non-isochronous microbeats, a practice he says is frowned upon by the 'schooled' Indian classical musicians. However, Braff's approach to non-isochronous microbeats is conceptually different, as we shall soon see.

Summary

The general framework for dealing with rhythm in this study assumes that audiation of a meter is primarily necessary and a rhythm pattern is audiated in the context of that meter. The basic meter has to have at least two layers in audiation, either measure and macrobeat, or macrobeat and microbeat, though three or more layers are preferable.

Macrobeats can be either isochronous or non-isochronous. Isochronous macrobeats have an equal number of microbeats per macrobeat, and non-isochronous macrobeats have unequal numbers of microbeats per microbeat. Usual meters have isochronous macrobeats, and unusual meters have non-isochronous macrobeats. Non-isochronous macrobeats are limited by $(S) > {}^{1/2} (L)$ in Braff's approach.

In his compositions, Braff usually audiationally maintains one macrobeat structure within a single unusual meter throughout a composition or section of composition. We have seen that his macrobeat lengths in many of his compositions do not all stay within a comfortably audiated range, but do fall within the possible range for human perception. Creating a strong experience of pulse for himself is central to Braff's approach and sonic persona. The strong pulse practice is combined with working with various rhythmic patterns, especially displacement, to further extend his rhythmic ability. He applies this same approach to learning to audiate unusual meters comfortably as well.

It appears possible to audiate up to seven microbeats per macrobeat, and possibly more, as a single grouping without divisions, within cognitional limits. This kind of audiation is central to Braff's rhythmic approach. It has been shown that it is possible to audiate non-isochronous microbeats without further mental subdivision. Non-isochronous microbeats can form one level of an audiated meter, with the limitation of $1<(S)<(L)<2$, which is a limitation that both Braff and London place on these kinds of microbeats. The core of Braff's concept is around manipulating the ratio between microbeats.

Two parts form the definition for transfiguration for this study: when either fewer or more macrobeats are audiated over a set amount of time, possibly including the period of a measure or period/s of a macrobeat/s and; when the number of macrobeats in a measure and the measure-lines remain constant, but the ratio between the macrobeats gradually shifts because of changes at the microbeat level.

Chapter 5

Tuplets: Rhythm Patterns

In order to understand precisely how Braff approaches the manipulation of microbeats it is necessary to first understand his classification and categorisation of rhythm patterns, which he calls "tuplets" (Interview 1: 2m07s). Tuplets are the elements of his core concept, the building blocks that allow the concept to function. These tuplets are applied audiationally in various temporal-spaces, giving rise to rhythm patterns and nuanced microbeats.

Tuplets are simply a "number of strokes" (Interview 1: 2m21s) occurring over a set duration of time; therefore tuplets could have two or more strokes and the number of strokes categorises the tuplets. "Any rhythmical pattern" can be considered a tuplet (Interview 1: 2m09s). For ease of application, Braff has restricted his tuplet rhythmic patterns to (L) note durations versus (S) note durations in various combinations. In addition, the ratio between long and short notes is restricted as somewhere between the ratios of 1:1 and 2:1 respectively with (S) $\geq {}^{1/2}$ (L) (Interview 1: 1m30s-9m40s). The tuplets become gradually more complex and difficult to audiate as the number of strokes increases. When these tuplets are isochronous, and occur within a macrobeat, they are considered microbeats but, when they are non-isochronous, new rhythmic possibilities occur. Braff explores these possibilities in his music.

Braffian tuplets can be thought of as his own taxonomy of rhythm patterns.[36] For ease of understanding, Braff notates (L) notes as eighth-notes, and (S) notes as sixteenth-notes. This form of notation bears no necessary resemblance to the actual value of the rhythm being performed other than that the one note value is longer than the other within the limitations described above (Interview 1: 11m-15m). Two-

[36] I have recreated Braff's taxonomy below.

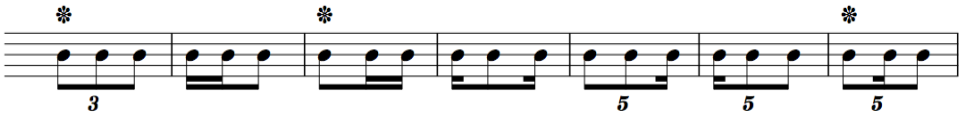
note tuplets are classified as duplets, three-note tuplets are triplets, four-note tuplets are quadruplets, and so forth, regardless of whether the notes of the pattern are equal or unequal in value (isochronous or non- isochronous). When the (L) and (S) notes of the tuplet are exactly in the ratio of 2:1, in whichever number and order they may occur, they are considered to be a tuplet pattern in its purest form.

At a basic level, these patterns are all within the time span of a single macrobeat, with the first note coinciding with the onset of the macrobeat. At a more advanced level, these same patterns are applied over periodicities shorter and longer than macrobeats. Below is Braff's tuplet taxonomy showing duplets to quintuplets. More tuplet patterns are obviously possible, though Braff tends to create more complex tuplet patterns by combining the patterns illustrated here. The patterns with the asterisk are the tuplets most commonly used by Braff and are also the tuplets used for the transfigurations through what I call metric-bridges (defined and discussed below) on *Inside* and "Goodmorning Sincity" described throughout this study.

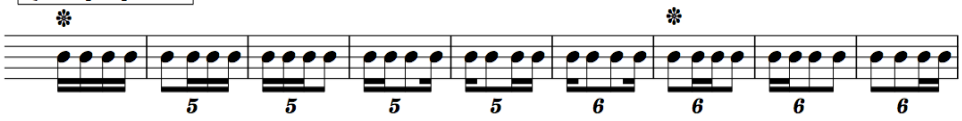
Rhythm Patterns Taxonomy

Duplet patterns

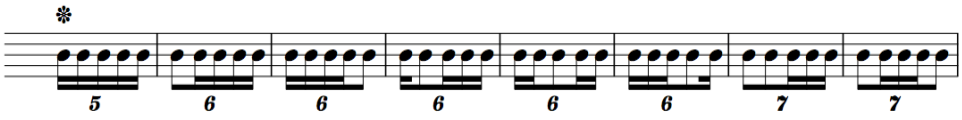
Triplet patterns

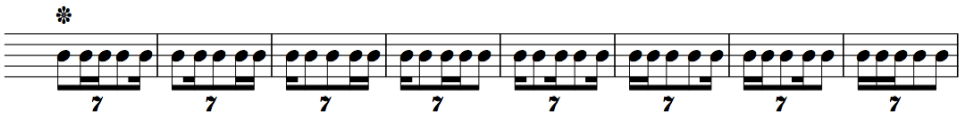


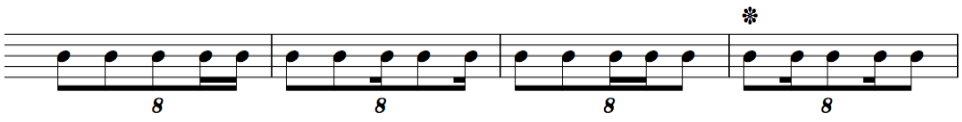
Quadruplet patterns

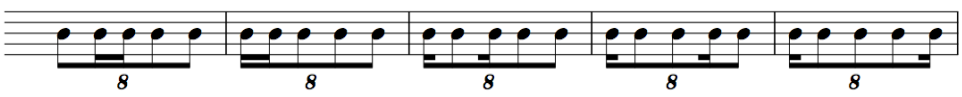


Quintuplet patterns









Braff's classification of tuplets leaves out many possible rhythm patterns, especially considering no patterns include notes with a ratio greater than 2:1 and all patterns start on the first instance of the macrobeat. Gordon has created a more complete taxonomy according to his classification of possible rhythm patterns that includes the possibilities of macro/microbeats, divisions/elongations, rests and upbeats.

Braff has found that he has had no need for practising more complex rhythm patterns since, once mastered, his tuplet patterns allow him to audiate and perform all other possible versions of rhythm patterns within the parameters of the meter, provided he has mastered various kinds of displacement utilising his tuplet patterns. With practise, tuplet patterns that, for instance, do not include a note coinciding with the macrobeat are audiated as easily as patterns that do. The same is true of patterns that are elongated, divided, or include rests. Furthermore, the relative simplicity of his patterns means that they are more easily translated to situations where the pattern is applied outside the normal parameters, for instance, in algorithms, or over periodicities shorter or longer than the macrobeat, as mentioned.[37] Since Braff's approach to rhythm, described here, has become fundamental to his way of playing, examples can be heard in any recordings made from *Voltage* (2010) to any of his more recent recordings.

The simple, yet somehow difficult, approach to creating non-isochronous microbeats is the core of Braff's concept. The approach allows us to categorise all known non-isochronous microbeats similarly. This will become clear with a few examples. Let us first imagine a macrobeat with triplet microbeats. The first two microbeats combined could form the (L) element of a duplet tuplet pattern and the last microbeat the (S) element. In this 2:1 ratio we have what Braff considers a duplet that is in his pure tuplet pattern form. However, when the duplets are in a ratio between the pure tuplet pattern of 2:1 and the isochronous duplets of 1:1, for

[37] The applications of Braff's patterns, in this manner, result mostly in displacement or seemingly polyrhythmic music. These aspects are discussed in more depth later.

example, 1.3:1, non-isochronous microbeats occur. This is the core of how Braff approaches creating non-isochronous microbeats.

When the pure tuplet pattern is performed in the ratio of 2:1 a different isochronous microbeat grouping emerges audiationally, in this case triplets, but only at the point where the performer chooses to feel the tuplet as a 2:1 pattern and no longer as a non-isochronous duplet. He believes, and has found, that the choice to cross from the non-isochronous tuplet to the pure tuplet pattern requires the performer to audiate the new microbeat grouping of the pure tuplet pattern, somehow inserting the un-played microbeats of the pattern in audiation.[38] Before this point, the performer experiences the tuplet as a non-isochronous microbeat, and it is non-isochronous because the originally isochronous microbeat is being 'phrased' or manipulated (non-isochronized) towards the pure tuplet pattern. "Each of those [isochronous] strokes has a way to travel from one point to the other" (Interview 1: 3m44s). This concept of gradually 'patterning' isochronous microbeats is plausible, considering the ability for humans to experience divisions as isochronous or non-isochronous, as discussed above.

Tuplets: Training the Physical Side of Tuplets and Microbeats

Once Braff generates a strong pulse feeling as described above, he has various ways of utilising his arms and hands to tap out his tuplets and microbeats on various surfaces, thereby creating physical experiences that train and ultimately enhance his audiational abilities. He has drawn some of his training approach from well-known standard drum kit sticking techniques. For instance, interchanging left and right hand strokes are called 'single strokes' by Braff and drummers alike. Braff also uses the words like 'doubles' for two strokes in one hand and 'paradiddles' for interchanging single strokes with double strokes in various combinations. These arm and hand

[38] Braff describes that he can phrase towards the rhythm pattern until he is sure that he has reached the pure tuplet pattern, but as soon as he audiates the un-played microbeats of the tuplet pattern he realises that he had not quite reached the extreme. I have experienced the same restriction in my practice. Whether it is possible to go beyond the extreme range of 2:1 and still experience the original non-isochronous microbeat grouping is unknown, but may be possible.

motions are applied to all the instruments and various surfaces in Braff's environment until he feels he has mastered the specific combinations of motions yielding a specific rhythmic result.

The specific strokes are, in fact, how Braff assimilates his various tuplet patterns from his rhythm taxonomy. He applies these strokes to creating isochronous and non-isochronous tuplets, whether they are macrobeats, microbeats or displacement figures. It seems that the feelings of the motions are as important as the resultant sound, meaning the total experience is important rather than just the result.

The patterns from the taxonomy are created through 'ghosting' certain motions. 'Ghosting' is essentially diminishing or altering the motion of one or more notes to lessen the amount of sound the motion/s create/s. There is still, however, an experience of creating the motion, even though it is lessened or altered, including when lessened or altered to the extent that there is no sound created by the motion. When Braff uses this training for rhythmic patterns created from microbeats, he experiences motions for every microbeat, even though the pure tuplet pattern excludes some of the notes of the microbeat group. With an emphasis on pulse, and creating motions for every microbeat, whilst 'ghosting' certain strokes to create tuplet patterns, Braff is, in fact, following the essential requirements for audiating rhythm: superimposing a rhythm pattern on a grid of microbeats interacting with macrobeats, as discussed in the previous chapter.

Tuplets: Non-Braffian Definitions

Kernfeld defines jazz swung eighth-notes similarly to many musicians: a product of the audiation of triplet microbeats with an emphasis on the first and third microbeats described by the word "TIN ke TY" (1995, p. 14). It should be clear from the example above that Braff's (L) (S) duplets cannot be considered swung from Kernfeld's perspective since Kernfeld's description illustrates either isochronous triplets or a Braffian pure tuplet pattern. The (L) (S) duplets have to be in a non-integer ratio between 2:1 and 1:1 to be considered swung in any of Braff's non-isochronous microbeats. However, the terms 'swung,' 'swing,' or related terms have

many associations and definitions. For this reason I use 'non-isochronous' to describe unequal microbeats of the kind described here, since it is the most precise description.

Some studies have been conducted on the nature of the non-isochronous duplets found in jazz. These studies all describe the nature of the duplets as non-isochronous in a non-integer ratio, usually between the values of 1:1 and 2:1, though sometimes up to the extreme of 4:1. These studies focus on the BUR (Beat-Upbeat Ratio) of non-isochronous duplets. It is clear from these studies that jazz musicians vary their BUR throughout a performance, theorised to be a means of increasing and decreasing tension by Butterfield (Why Do Jazz Musicians Swing Their Eighth Notes?, 2011). Some of these studies include the work of Honing with Bas de Haas (Swing Once More: Relating Timing and Tempo in Expert Jazz Drumming, 2008) and Honing with Ladinig (Exposure Influences Expressive Timing Judgements in Music, 2009).

It is from this seemingly one-dimensional perspective that Braff's non-isochronous microbeats are considered in this study. There are many other qualities to rhythm, especially expressive rhythmic qualities, which could be discussed. Some of these aspects include:

> [t]he relative length of adjacent notes or silences [that] create a second layer of pulsation. Placement of notes in relationship to the underlying beat – on the beat, between the beat, ahead of it (by a lot, by a little), behind it (by a lot, by a little)… (Kernfeld, 1995, p. 13)

accented, or unaccented syncopations, and so forth. Discussing these aspects in depth, and considering their relation to Braff's music and his rhythmic approach, is beyond this study's scope.

However, Braff's rhythmic approach does not exclude these aspects of expressive rhythmic qualities. He has described how his sense of what can be considered the macrobeat onset has perceptually expanded due to his rhythmic training through his approach (Personal communication, Jan 2015). This means that he perceives the

macrobeat onset as an area rather than as a single instance. If he plays in the centre of this macrobeat onset he would be considered as playing on the beat, and if he plays towards the edges of the macrobeat onset he would be considered either ahead of or behind the beat, depending on which edge he approaches. He does not specifically differentiate, in his description of non-isochronous microbeats, between the various possible placements of the notes in relation to the macrobeat. His concepts around phrasing or swing, therefore, naturally assume the possibility of playing anywhere in the macrobeat onset area. Braff's description of a nebulous macrobeat is a bit like the nebulous man himself, not wanting to be restricted to the boundaries of a single point, preferring the freedom to explore a little.

Wynton Marsalis' recording of "Autumn Leaves" will further serve to illustrate what Braff's rhythmic concept is not about (Standard Time, 1987). Again, Braff does not exclude Marsalis' approach from his approach, but Braff's aims and methods are distinctly different, as will become abundantly clear as we proceed. In this recording the 'head' of the composition is performed in multiple time signatures, with one measure assigned to each. The measure lengths stay more or less constant as the meters move from a theoretical 1/4, to 6/8, to 3/4, to 4/4, to 5/4, to 6/4, to 7/4, and eventually a double time 4/4 (therefore eight macrobeats in the time of one measure). This process is reversed and repeated a number of times in this recording.

If one had to liken a measure in this recording to a macrobeat in Braff's approach, similarities arise. A set temporal-space is altered through the manner in which it is nuanced by its divisions in both approaches, while the total period of the temporal-space remains more or less constant. However, in the Marsalis recording, the temporal-space is altered by set isochronous amounts from measure to measure, replacing one division kind, in this case one meter, immediately with another. If one had to apply Marsalis' approach to the measure, instead, to a single macrobeat, creating differing microbeat groupings that gradually become more numerous or less numerous, his approach would be closer to Braff's, especially considering the use of quintuplets and septuplets. Such an approach is not unique though. There are

numerous examples in Western and other musical cultures of this kind of approach to microbeats, previously discussed.

Another clearly distinguishing factor in Braff's approach is the gradualness of the shifts in temporal-space. The non-isochronizing of microbeats towards pure tuplet patterns could happen instantaneously, but Braff focuses on the rhythmic qualities and possibilities that occur while gradually shifting from one isochronous state to another. Furthermore, much of his interest lies in holding the audiation of non-isochronous microbeats, since this audiation allows for more rhythmic possibilities, as previously discussed. As evident below, Braff is interested in what happens when the audiation of one microbeat kind is related, through the use of his tuplet patterns, to another. For these reasons his approach cannot be seen as merely substituting one division of a temporal-space with another, as in the Marsalis recording, or the numerous other musical examples that exist.

Metric Bridges: A Function of Non-isochronous Microbeats

While the non-isochronous microbeats are present, a type of metric-bridge between the original isochronous microbeats and the isochronous microbeats of the pure tuplet pattern occurs. A metric-bridge is, therefore, a process of transfiguring from one meter to another, since once a complete shift from one side of the metric-bridge to the other has occurred the number of microbeats to each macrobeat/measure has changed, but the measure maintains approximately the same length, allowing for human error.

Braff discovered that while the performed music has a metric-bridge, rhythmic patterns and/or phrases constructed out of microbeats belonging to both isochronous sides of the metric-bridge sound harmonious, as do some extended rhythmic elements that relate to either extreme. Naturally, rhythmic material constructed out of the non-isochronous microbeats of the metric-bridge also sounds harmonious. In essence, the metric-bridge extends the expressive possibilities of the performer. As will shortly be seen, this is not an entirely new phenomenon, but

because Braff has framed the concept specifically and uniquely, he is able to extend it into previously unconsidered areas.

At this point some specific examples will help to clarify exactly how Braff conceives the core of his approach. The simplest place to start is in a jazz context with the non-isochronous eighth-notes, or duplets, discussed above. Simply put, the macrobeat has two non-isochronous microbeats in the order of (L) to (S). On the one side of the possible metric-bridge in this example, isochronous duplets (equal eighth-notes) are present, and on the other side, in the ratio 2:1, a pure tuplet pattern constructed out of isochronous triplets (equal eighth-note triplets performed as a quarter and an eighth within a macrobeat) is present. The isochronous duplets are non-isochronized by the performer, gradually altering the ratio between the two microbeats towards the triplet-based tuplet pattern, making the first note gradually longer, and the second gradually shorter, while not altering the total period of the macrobeat.

Two things are vital to the concept: firstly, that the performer still experiences duplets as duplets (two strokes), even though they are non-isochronous; secondly, that the performer can choose and train how much they non-isochronize towards the pure tuplet pattern. Braff considers this specific example of phrasing as (L)-(S) duplets and has worked on phrasing them slightly 1.05:1, and extremely 1.95:1. He found that he is able to non-isochronize toward the pure tuplet pattern in 5% increments accurately through testing and training with the help of computer software.

In jazz improvisations that have this kind of metric-bridge one will often hear performers utilising isochronous duplets and isochronous triplets in their rhythmic material. So-called ‘double-time’ rhythmic phrases consisting of quadruplets (isochronous or slightly non-isochronous) as well as rhythmic phrases containing sextuplets also occur relatively frequently. Of course, non-isochronous (L)-(S) duplets in varying ratio percentages between 1:1 and 2:1 also occur frequently in rhythmic figures. Therefore, in jazz it is common to hear rhythmic material belonging to both isochronous microbeat extremes on either side of the metric-bridge (isochronous

duplets and triplets), as well as rhythmic material related to both sides (quadruplets and sextuplets) and rhythmic material constructed from the non-isochronous duplets. This is a prime example of a metric-bridge allowing for more expressive possibilities for the performer, as mentioned above.

Braff describes the previously mentioned non-isochronous Brazilian sixteenth-notes similarly, therefore, as a transfigurational process of a metric-bridge that non-isochronizes isochronous sixteenth-notes. These specific sixteenths are a quadruplet tuplet he describes as being (L)-(S)-(S)-(L). On the one side of a metric-bridge, resulting from this kind of transfiguration, would be isochronous quadruplets in the ratio 1:1:1:1 and on the pure tuplet pattern side would be sextuplets in the ratio 2:1:1:2. Again the performer can non-isochronize towards the pattern slightly or extremely depending on their skill, experience and desire.

There are three possible examples of non-isochronizing triplets. This can occur when on the one end of the metric-bridge isochronous triplets exist and on the other side the pure tuplet patterns relates to isochronous quadruplets. The ratios of the patterns could be 2:1:1, 1:1:2 or 1:2:1. Braff has heard examples of these kinds of non-isochronized triplets while listening to the music from traditional West-African regions, especially the triplet non-isochronized towards the 2:1:1 pure tuplet pattern.

Metric Bridges: Leaving the Norm Behind

Through Braff's transfigurational approach, many other non-isochronous microbeat groupings are possible, beyond those usually considered or heard. Let us firstly consider the examples given so far: Duplets can be non-isochronized toward a triplet pattern that is (S)-(L) instead of the (L)-(S) pattern relating to jazz. The (S) (L) metric-bridge would consist of duplets non-isochronized between the ratios of 1:1 and 1:2 on either extreme of the metric-bridge.

Quadruplets could be non-isochronized differently in three ways to the Brazilian sixteenths described above: as (S)-(L)-(L)-(S) with the extremes of the metric-bridge

being between the ratios of 1:1:1:1 and 1:2:2:1; as (S)-(S)-(L)-(L) with the pure tuplet pattern in the ratio of 1:1:2:2; or as (L)-(L)-(S)-(S) with the pure tuplet pattern in the ratio of 2:2:1:1.[39] At this point, the possibilities of Braff's approach begin to separate from what has been more commonly heard in the various world cultures described thus far.

Some possible, atypical, non-isochronous triplet-based metric-bridges, considered by Braff in his approach, truly depart from common Western praxis. Metric-bridges that non-isochronize towards patterns of (L)-(L)-(S), (L)-(S)-(L) (mentioned before) or (S)-(L)-(L) in the ratios 2:2:1, 2:1:2 or 1:2:2, respectively, have isochronous triplet microbeats on the one side of the bridge and isochronous quintuplet microbeats on the pure tuplet pattern side. As discussed, quintuplets are relatively common, but it is uncommon to use them as a set, audiated microbeat group and musicians generally do not practice, perform or write music that requires this kind of audiation from the performer.

However there are numerous examples on *Inside* and in Braff's newer music where he has utilised non-isochronous triplet metric-bridges related to these specific pure tuplet patterns. These metric-bridges are central compositional and improvisational tools in the following recordings: "Empathy for the Devil", "Berimbau" and "Dance of the Fireflies" (2011). Similarly, metric-bridges non-isochronizing quadruplets to quintuplets, quintuplets to sextuplets, quintuplets to sextuplets, quintuplets to octuplets, and so forth, are all possible within the (L)-(S) ratio restriction of 2:1, in any combination of (L)'s and (S)'s. Some of these possible metric-bridges have been utilised as tools in Braff's compositions and improvisations, as will be demonstrated below.

A performer, like Braff, who has mastered both microbeats up to and including at least septuplets, and various metric-bridges connecting the differing microbeat groupings through multiple available pure tuplet patterns, has the ability to

[39] The other two possible rhythm-bridge constructions of (L)-(S)-(L)-(S) and (S)-(L)-(S)-(L) have been left out here because they are doubles of the (S)-(L) or (L)-(S) duplet rhythm-bridges.

seamlessly shift between measure signatures not usually closely related. This is like tempering pitches in the well-tempered tuning system. Temporal-spaces, through rhythmic tempering, become related where they would previously not relate closely and easily, discussed in more depth below. Crossing a metric-bridge can be done relatively quickly, within a measure or even less sometimes, or be stretched out to take as long as the performer wants.

Once transfiguration has occurred by completely crossing the metric-bridge, the temporal-space can be further transfigured. The performer can reinterpret the measure, macrobeat and microbeat structure to include either fewer or more macrobeats, but would maintain the same number of microbeats to each measure. There is evidence in Braff's performance that this kind of transfiguration can happen extremely quickly, or even seemingly simultaneously, at the moment that the performer chooses to complete a metric-bridge crossing.

There are multiple examples of these various kinds of transfigurations occurring in Braff's music. Below "Mantra" (Braff M. , Inside, 2011) and "Good Morning Sincity" are utilised to demonstrate some examples. Braff calls his compositions that transfigure through multiple temporal spaces "Rhythm Journeys" (Personal communication, Jan 2015).

Metric-Bridges: Why Metric Bridges?

The spiritual motivations behind Braff's musical approaches have been extensively discussed in the first chapters of this study. It should not surprise the reader that metric-bridges play a spiritual role in Braff's rhythmic approach. I have discussed that being in the 'now' is central to Braff's experiential aims while creating music. I have further discussed numerous examples of how he aims to achieve trance-states through his music. While in these trance-states he is in the 'now.' Furthermore, some of his musical theories aim to explain musical experiences in spiritual terms. So, how exactly do metric-bridges relate to Braff's spirituality?

Braff has found that non-isochronous microbeats have the peculiar ability to increase, or strengthen, his experience of pulse feeling. A metric-bridge "strengthens the pulse and make the music groove" (Interview 1: 1h31m31s). An increased pulse feeling causes a greater fulfilment when dancing to those macrobeats (Interview 1: 19min-21min). He has found this to be true of all the possible, non-isochronous microbeat groupings he uses, even unusual or specifically Braffian non-isochronous microbeat groupings like non-isochronous quintuplets.

As discussed in the first chapter, he has further found that "that feel of a strong pulse is what makes you dance" (Interview 1: 19m14s). The stronger the pulse feeling, and the greater the dance experience, the more deeply and easily he is able to enter trance-states. He specifically and consciously uses metric-bridges to create spiritual experiences with deep trance-states on stage (Personal communication, Jan 2015). Once more his reasons for exploring a specific musical device, in this case metric-bridges, have proven to have strong spiritual motivations.

Metric-Bridges: Mantra

"Mantra" is composed utilising a primary metric-bridge between the unusual measure signatures consisting of seven isochronous microbeats, arbitrarily labelled as 7/8, on the isochronous side (microbeat ration of 4:3), and 11 isochronous microbeats, 11/8, on the tuplet patterned side of the bridge, also an unusual paired measure signature (microbeat ratio of 6:5). There is a secondary metric-bridge in which the 11 isochronous microbeat tuplet patterned side becomes the metrically less numerous isochronous side. These microbeats non-isochronize towards a pure tuplet patterned isochronous side with 15 microbeats per measure, labelled here as 15/8, with microbeats grouped as 4:4:4:3 to create four non-isochronous macrobeats.

At times in this recording, one hears both the primary and secondary metric-bridges interacting one measure apart. At 3m29s one can hear the secondary metric-bridge emerging (also from the drummer only from 2m45s to 2m52s). In the 15/8 sections two macrobeats of eight microbeats and seven microbeats, respectively (8:7), could

be audiated. However, it is more likely that the 15 microbeat measure is actually transfigured being audiated with four macrobeats, as described. This transfiguration happens seemingly instantly and is reversed very quickly back to the metric-bridge. From 3m59s for approximately seven seconds the whole band crosses the metric-bridge completely performing 15 isochronous microbeats per measure.

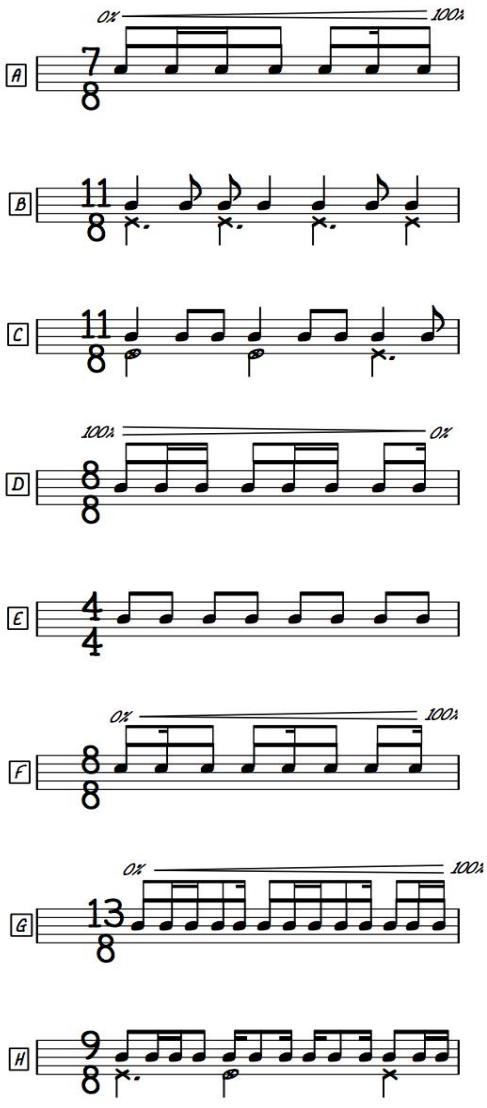
Most of the improvisation and melodic material moves between the two sides of the primary metric-bridge with rhythmic material belonging to the isochronous seven microbeat side (e.g. piano and drums at 1m30s, piano at 2m14s), the non-isochronous seven microbeats (the majority of the track) and the isochronous 11 microbeat patterned side (e.g. drum fill at 42s and 1m16s) interacting freely. Towards the end of the recording, the band transfigures back towards the pure seven isochronous microbeats, taking time to transfigure over the metric-bridge. Collectively the music gradually becomes more isochronous until, at 5m29s, it is clear that all the musicians are performing seven isochronous microbeats per measure. The music remains uniformly in this state until Braff himself initiates, once more, a slight non-isochronization towards the pure tuplet pattern again at 6m23s. The band holds this non-isochronous temporal space until the gentle end of the recording.

Mantra is a prime example of a simple baseline pattern consisting of seven tones per measure being transfigured through multiple temporal spaces, typically not easily related, but seemingly naturally related through metric-bridges tempering seven isochronous microbeats to 11 isochronous microbeats, and in turn 15 isochronous microbeats, all the while maintaining the seven tone pattern of the baseline. I believe that the manner in which this band has achieved this feat is truly unique with these kinds of transformations pushing the boundaries of possible interpretations of single musical ideas.

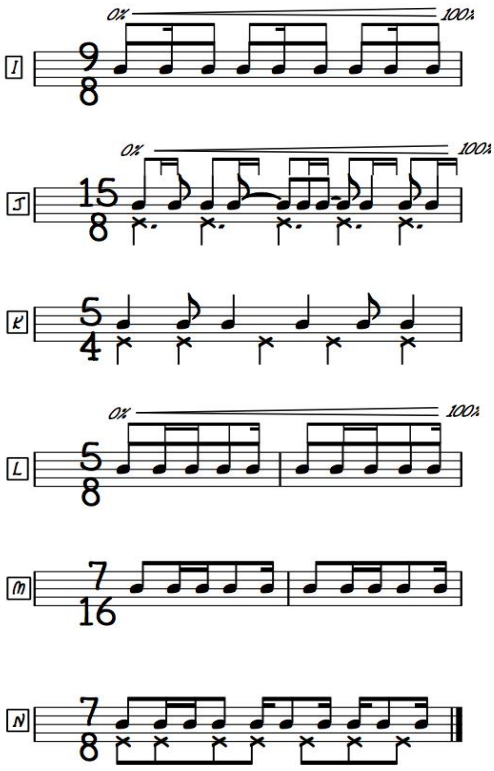
Metric-Bridges: Goodmorning Sincity

"Goodmorning Sincity" is a prime example of Braff's use of metric-bridges to go on a "rhythm journey." In this set composition, metric-bridges prove to be very useful as

compositional tools, allowing for heightened and lessened musical energy states associated with the varied temporal-spaces. The segment analysed for this study transfigures through 14 different phases marked ‘A’ through ‘N’. Below, a score of the various sectional ideas is written out.



2



Section ‘A’ (43s) starts with an unusual measure signature, again consisting of seven isochronous microbeats, 7/8, each microbeat arbitrarily assigned the value of an eighth-note. Using the same metric-bridge and macrobeat structure as “Mantra,” (microbeat ratio of 4:3) the rhythmic material transfigures in the same manner to the unusual paired measure signature with 11 isochronous microbeats, 11/8 (microbeat ratio of 6:5). Remaining unusual and paired, the 11/8 measure is immediately transfigured to have four macrobeats at ‘B’ (49s) in the microbeat ratio 3:3:3:2. At ‘C’ (3m) the measure is once again transfigured, with the 11/8 measure being reinterpreted as having three macrobeats in the microbeat ratio 4:4:3. These changes are not remarkably different from the rhythmic devices found on *Inside*, however, the changes in the remainder of the recording clearly demonstrate how Braff had, with this recording of “Goodmorning Sincity” in December of 2014, further developed his rhythmic concept from the 2011 *Inside* recordings.

The first major shift from previously heard material utilises a metric-bridge, transfiguring the unusual unpaired 11/8 to an unusual 8/8 (3:3:2) at ‘D’ (3m16s), further transfigured to a usual measure signature, 4/4, with isochronous macrobeats at ‘E’ (3m22s), over which Braff takes an improvised solo. At the end of this improvisation Braff initiates the next metric-bridge at ‘F’ (6m4s) transfiguring the music to an unusual 13/8 (referred to below) at ‘G’ (6m17s). The band remains mostly in an isochronous 13/8 but slowly transfigures the music with a metric-bridge leading to an unusual 9/8 (divisions of microbeats (sixteenth-notes)) in the ratio 7:7:4).[40][41]

At ‘I’ the 9/8 macrobeat structure is transfigured to a triple unpaired usual meter (3:3:3) and the next metric-bridge is initiated, leading to 15/8 at ‘J,’ this time a

[40] This change could have been described as phrasing towards 18/8, and reinterpreting the music as 9/4; however, it has not been done so here because Braff himself described this change as illustrated above, and again measure signatures are largely arbitrary, having meaning only through audiation.

[41] Sections ‘G’ and ‘H’ are further discussed below.

quintuple unpaired usual meter (5:5:5) (7m56s).[42] However, at 'J' the microbeats are interpreted as triplets rather than quintuplets, meaning that the measure is transfigured to having five isochronous macrobeats, therefore, a triple unpaired usual meter. At 8m35s the triplets are non-isochronized quickly to quadruplets, changing the measure to a quadruple unpaired usual meter, still maintaining the 5/4 integrity of the measure.

Shortly thereafter the section marked 'K' (8m49s) is initiated where a quintuplet related pattern from Braff's rhythm taxonomy, (L)-(S)-(L) is used over duplets in the same 5/4, to divide the measure into two groups of five eighth-notes each. The drummer still maintains a hi-hat on the original 5/4 macrobeats blurring the obviousness of the change. At 'L' (9m23s), the hi-hat ceases and the eighth-note driven quintuple usual meter, 10/8 (notated as two bars of 5/8 by Braff) becomes more blatant. A metric-bridge transfiguring to 14/8 (notated as two measures of 7/8) is quickly crossed and by 'M' (9m23s), the band is in the new septuple usual meter. This measure is soon transfigured to a duple usual meter with seven macrobeats, 7/4, at 'N' (9m41s).

Theoretically, a performer who has mastered enough rhythm patterns, and knows how to create various metric-bridges, can transfigure any measure to any other measure within the cognitive limitations of audiation. Shifts in temporal-space created this way are far subtler and, arguably, more musical than the usual shifting of simply changing one microbeat group for another. I find the shifts refreshing and surprising, creating a more sophisticated rhythmic pallet for musicians to draw from. However, rhythmic freedom is still somewhat limited at this level of skill in that it requires the maintenance of the measure lengths in set proportions, either 1:1 or 2:1 as seen thus far. To overcome this limitation, Braff makes use of rhythmic displacement, discussed later.

---

[42] The terms 'triple' and 'quadruple' in the descriptions of the meters used in this paragraph refer to each macrobeat consisting of triplet microbeats and quadruplets respectively. The significance of this labeling is discussed at length in the following chapter.

Harhythmanizing: Part 2

In Braff's theory relating tonality to rhythm, discussed above, what he considers as a rhythmic tonic with a set length will not necessarily relate to another rhythmic tonic of a differing length. However, through the use of metric-bridges, and displacement, rhythm tonics can be related, and usually disharmonious rhythmic partials can coexist harmoniously. Metric-bridges are how Braff tempers rhythm similarly to the way that our current, standard tuning system tempers pitch in our perception. Furthermore, metric-bridges allow for a broader spectrum of possible metric modulations to rhythm tonics of various lengths. Theoretically, there is a rhythmic connection between all possible rhythm tonics and, with metric-bridges, a way to move between them, as discussed below (Interview 1: 41m-51m; 1h21m-1h37m).

Further expanding on his concept, Braff believes that when rhythms of traditional music from parts of Cuba and, possibly, other global regions are viewed from his perspective, the occurrence of related rhythmic partials can be clearly heard. He gives the example of a three-two clavé. This clavé has five notes and can be seen as a quintuplet in an extremely non-isochronous form. This pattern co-exists with duplet related, triplet related and quadruplet related rhythms, meaning that, while these rhythms occur simultaneously, they construct what would be a tonal major triad, since the ratios of tonic to partials include 1:2, 1:3, 1:4 and 1:5. These same ratios correspond to the first partials found in tonality. Intervallically, they would include the perfect octave, the perfect fifth, the perfect fourth and the major third respectively. Combining these intervals forms a major triad. The rhythmic patterns associated with each metric division are non-isochronized to varying extents, thereby preventing excessive interference with one another. A harmonious and successful amalgamation of quintuplets, quadruplets, triplets and duplets occurs within the same temporal-space. Braff believes it is highly possibly that traditional African music can be understood from this same perspective. Once more his preference for universal theories is demonstrated.

Summary

Braff's rhythmic approach makes use of tuplets. Braffian tuplets are a number of strokes occurring over a set duration. Any reasonable duration can be used, with the simplest application of tuplets occupying precisely the same duration as a macrobeat. Tuplets can have two or more strokes and are classified by the number of strokes as duplets for two strokes, triplets for three strokes, and so on. Tuplets are restricted to being in a (L) to (S) ratio with the restriction (S) $\geq {}^{1/2}$ (L) ≥ 2 microbeats. Braff has organised his tuplets into a rhythm taxonomy that he works with. A pure tuplet pattern occurs when the ratio between the strokes is exactly 2:1 in any order of assignment of (L)'s and (S)'s.

Braff has found that practicing tuplets in various contexts has eliminated the need to practice other rhythm patterns. Once tuplet patterns are mastered within a meter he is able to audiate all other rhythmic material in that meter. He works on his rhythmic material physically (bodily) through strong pulse feelings and tapping. He often steps and taps on various surfaces with his hands using drummer sticking patterns such as single strokes and paradiddles. Pure tuplet patterns are practiced by 'ghosting' non-essential microbeats and playing the notes of the tuplet pattern.

Braff's approach allows for expressive rhythmic performances, such as playing ahead or behind the macrobeat. He views the macrobeat onset as an area rather than as a single instance. He can play either at the centre of the macrobeat area, or closer to the edges, resulting in a perception of playing ahead or behind the macrobeat. Braff also includes accenting as part of his rhythmic approach. However, these expressive rhythmic elements are peripheral parts of his approach, sometimes described in other approaches. With Braff's approach these expressive elements coincidently become accessable because of his specific approach to rhythmic training, and are not a focus of that training.

Braff's approach deals primarily with relating two different microbeat groups that both fit within the duration of a single macrobeat. This relation is usually a gradual process. Much of his focus is on the process of relation rather than its end results.

For this reason, his approach cannot be classified as merely interchanging microbeat groupings within a macrobeat as is commonly done in most music. Furthermore, his gradual shifting nuances temporal-space specifically creating special rhythmic circumstances.

Metric-bridges are created when an isochronous microbeat grouping is non-isochronized towards a pure tuplet pattern. A metric-bridge is effectively the ongoing process of relating one microbeat grouping to another. While in the metric-bridge, the microbeats are at neither the ratios of 1:1 between microbeats (isochronous microbeats) or 2:1 (pure tuplet pattern). The process can be controlled, meaning the performer can decide on the rate of change or pause at any point during the change, holding a specific state of audiation. Exiting the metric-bridge is a conscious choice that is achieved by audiating isochronous microbeats from either related meter of that metric-bridge. Rhythmic material from either related meter is available while in a metric-bridge, as well as rhythmic material specific to that metric-bridge.

Non-isochronous duplets in jazz, triplets in African music, and quadruplets in Brazilian music can all be described as metric-bridges; therefore, can be described as a result of relating an isochronous microbeat grouping to one of Braff's pure tuplet patterns. However, through his approach, Braff is able to create and perform numerous other non-isochronous microbeat groupings, such as triplets relating to quintuplets, quintuplets relating to septuplets, and so forth. These metric-bridges are used as compositional and improvisational tools and can be heard in his recordings. Two clear examples of this include his recordings of "Mantra" and "Goodmorning Sincity."

With his tuplet patterns and metric-bridge approach, Braff can relate any audiable isochronous microbeat to any other. He believes his process is a kind of rhythmic tempering, similar to the process of tonal tempering in Western music. The microbeats are considered rhythmic partials to a rhythmic root. His rhythmic tempering allows the relating of any audiable rhythmic partial to any other. With the

addition of rhythmic displacement to his metric-bridge approach he plausibly believes he can relate any audiable meter to any other. He further believes that his rhythmic tempering could explain rhythmic phenomena outside of Western musical praxis, such as the music of Cuba and Africa.

Chapter 6

Meters: It's All In Your Head

How meter and related rhythmic elements are perceived is of specific interest to this study. As evident below, how listeners and performers (Braff included) alike perceive rhythm is based on how they perceive meter. Additionally, their "sense of meter guides the motor behaviors used in the production of musical sounds" (London, 2012, p. 3).

Audiation is, for Gordon, a key process underlying our rhythmic perception and all perception of musical activity: "Audiation is to music what thought is to language. Without audiation, notation can teach us virtually nothing. Notation simply helps us remember what we have already learned and achieved through audiation" (2009, pp. 5-6). This sentiment is true for any musical element introduced theoretically and not experientially. I personally found it essential to physically experience the main elements of Braff's rhythmic approach with him before I could audiate these elements, or even hope to understand and explain them theoretically.

Audiation acts as a loop with the audiating listener focusing on selected sonic information in their environment, interpreting and creating a response to this information internally and then externally, sonically affecting the environment to which the listener will once again respond, thereby completing the loop. Much of this process occurs unconsciously. The listener's response to the environment draws on their past training and experience. "Not only do we respond to regularities that are present in our environment; we also project temporal regularities and order onto our environment" (London, 2012, p. 13).

Combining Gordon's and London's perspectives, audiation, then, relies on the listener subjectively 'metricizing' their sound environment. For Gordon, when rhythm is audiated it is perceived as a series of durational patterns within a

temporal-space, and not as individual note values combined to create rhythmic patterns (Gordon, 2009, pp. 5-6). Similarly, London states that temporal aspects of the music we hear stimulate a cognitive response. This response leads to our perception of meter, in turn influencing how we perceive the rhythmic patterns within the context of our perceived meter (Ibid. p. 4).

More specifically, meters are, for London, purely cognitive responses to musically perceived passages within the listeners themselves. The listener's response is based on the "temporal capacities" of that listener (Ibid. p. 22). The same principle can be applied to how the performer, rather than the passive listener, perceives meter, with some key differences: How the performer cognitively approaches the meter is often rehearsed or predetermined in some manner, and the performer generally has to set up "a pattern of metric invariances that will guide his or her production of the musical surface" (Ibid.).

London, drawing from Pressing's research and conclusions, points out that the time-scale limitations that apply to our perception of rhythm correspond to the limitations of our ability for action and perception generally, specifically regarding the time-scales related to our sensorimotor system. Within the limitations of these time-scales, at least two layers of rhythmic "periodicy" are necessary for metric audiation, as has been briefly mentioned before. Although:

> …three or more are preferable, as this provides an attending framework that allows the listener to track rapid, moderate, and relatively slow event onsets; these correspond to subdivisions [microbeats] of the tactus [macrobeat], the tactus level itself, and a higher-level ordering of beats into measures (London, 2012, p. 16).

Meters: Metric Labels

Gordon has a comprehensive approach to classifying meter, useful for describing Braff's rhythmic approach: As previously mentioned, "usual meters" have macrobeats of equal durations within the measure. If the microbeats divide the

macrobeats into two equal parts the meter is considered “duple” as well. Similarly, if the microbeats divide the macrobeats into three equal parts the meter is considered triple. If a combination of both two and three equal divisions of the macrobeats are used, the meter is considered combined.

For the purpose of explaining Braff’s rhythmic experience and approach, Gordon’s definitions of meters have to be expanded. Usual meters have to include at least quadruplets, quintuplets, sextuplets and septuplets as possible, constantly audiated microbeats on which different rhythm patterns will be constructed. Therefore, usual meters can also be classified as quadruple, quintuple, sextuple or septuple. The macrobeats in unusual meters logically can, and in Braff’s compositions often do as shown above and below, include quadruplets through septuplets as well. However, there are certain perceptual considerations when doing so for usual and unusual meters.

If the perceptual limitations for microbeats or shortest division are considered, as discussed above, then the approximate fastest pulse rate for macrobeats of quadruplets would be 150 bpm; for quintuplets: 120 bpm; for sextuplets: 100 bpm; and, for septuplets, 86 bpm. A further consideration is that it would be possible to have slower pulse rates for the macrobeats described; however, as noted, there is a preferred pulse rate for macrobeats between 83bpm and 117bpm. Perceptually then, pulse rates that are not within this preferred range, and where macrobeats are divided into microbeat groupings other than duplets and triplets, will be more cognitively taxing and therefore less likely to occur. The listener or performer would probably be more likely to group microbeats to include fewer microbeats per macrobeat when macrobeat perception becomes strained.

Also, audiably grouping septuplets into a single macrobeat has a very narrow band of pulse rate possibility (83bpm-86bpm) within what is considered preferable for macrobeat length according to the perceptual limitations referred to here. Of course, with training, musicians can and do increase this range of comfort. However, untrained listeners will have a different experience, meaning that general audience

entrainment will be further challenged. Non-isochronous microbeats need to be included in the definition of usual meters as well, since their audiation is similar to that of isochronous meters, as previously discussed.

Braff's compositions like "Empathy for the Devil," "Dance of the Fireflies" and "Berimbau" (Inside, 2011) can now be considered to be audiated metrically as usual meters. All three compositions are audiated with two isochronous macrobeats. Since these compositions are built on the same metric-bridge structure, the audiation of the two macrobeats per measure can have three specific states. In the first state the meter is usual triple, in the second state these microbeats are non-isochronous (L) (S) (L), though the meter is still usual triple, and in the third state, the microbeats are once again isochronous, but now the meter is usual quintuple. Without this specification, the usual quintuple meter could easily be misconstrued as an unusual meter, in opposition to how Braff describes his audiational experience of these meters. I experience these meters in the same way that Braff describes them when I perform them.

The term "combined," used by Gordon, refers to a combination of duplets and triplets in usual meters. However, should the meter include audiation of a combination of microbeats other than duplets and triplets, the meter can also be considered "combined." For instance, the meter would still be considered usual combined meter if it requires audiation of triplets in the first macrobeat and quintuplets in the second macrobeat within the meter.

Gordon's explanation of doubly combined meters is also useful for the purpose of investigating Braff's music:

> Doubly combined meter occurs when two or more groupings of three microbeats are superimposed on underlying macrobeats of different lengths in conjunction with at least one grouping of two microbeats superimposed on an underlying macrobeat of any length, or when two or more groupings of two microbeats are superimposed on underlying macrobeats of different lengths in

> conjunction with at least one grouping of three microbeats superimposed on an underlying macrobeat of any length (2009, p. 137).

If Gordon's explanation of this kind of meter is expanded similarly to his previous terminology that has been expanded in this study thus far, in terms of a person's ability to audiate more than only duplets and triplets as single macrobeats, then quadruplets, quintuplets, sextuplets, septuplets, and so forth, can also be superimposed on single macrobeats of different lengths, which logically could still be considered a doubly combined meter. However, two simplifications of Gordon's explanation are suggested here. Firstly, music is considered in doubly combined meter when it requires audiation of non-isochronous macrobeats and the isochronous microbeats are not equal in duration across all macrobeats. Secondly, it is possible to have a doubly combined meter that has only two macrobeats to a grouping, not a minimum of three as in Gordon's explanation.

Braff has not composed using meters that can be classified as "doubly combined." However, regardless of the meter, he will occasionally in his improvisations play a microbeat grouping that is not part of the meter within a macrobeat. According to this rhythmic framework, at these moments he is audiating a doubly combined meter in order to execute his improvisational ideas. This practice is common amongst improvising musicians familiar with jazz in both usual and unusual meters. It is possible to audiate a doubly combined meter with non-isochronous macrobeats, and seems possible to do so with both non-isochronous microbeats combined with non-isochronous macrobeats. Speaking from personal experience, it is possible to insert alternate microbeat groupings between the non-isochronous macrobeat attentional peaks of a metric-bridge.

Bearing in mind the definitions of various meters discussed here, Gordon's vehement exclusion of 3/4 as a possible meter consisting of three macrobeats is questionable. Gordon only views this measure signature as being audiated as a single macrobeat per measure equally divided into triplets (pp. 58,60,115-121). Once again, the perceptual limitations of audiating macrobeats comes into play. If the

attentional peaks of the quarter-notes in this meter fall within the comfortable range of macrobeat audiation, surely it is most likely that the measure will be audiated as having three macrobeats?

Furthermore, the duration of the macrobeats could be relatively long when audiating microbeats as, say, septuplets as opposed to duplets. Added to this, audiating the full measure as a single macrobeat with each microbeat divided into seven parts and then further dividing the microbeats becomes extremely taxing if not impossible. It appears, then, that a reclassification of usual meters is required. If 3/4 is to be considered as a possible meter with measures consisting of three macrobeats, usual time signatures can have paired or unpaired macrobeats, similarly to unusual time signatures.[43]

Meters: Breaking Limitations

London has created a set of "well formedness constraints" (WFCs) for determining whether a meter is possibly conceivable and the difficulty of doing so. These have been included here for convenience and are as follows (2012, p. 92):

> *Definition*: The lowest level of the metrical cycle involves the shortest IOIs and includes all of the attentional peaks in the cycle; It is referred to as the *N cycle*, as N = number of attentional peaks present.
>
> *Definition*: Higher levels involving IOIs than those present on N cycle, are referred to as *subcycles*.
>
> **Perceptual Constraints on Levels and Cycles**
>
> WFC 1.1: IOIs between attentional peaks on the N cycle must be greater than ≈ 100 ms
>
> WFC 1.2: The *beat cycle* involves those attentional peaks whose IOIs fall ≈ 400 ms and ≈ 1 200 ms.

[43] Gordon defines usual meters as only having paired macrobeats.

WFC 1.3: A meter may have only one beat cycle.

WFC 1.4: The maximum duration for any or all cycles is ≈ 5 000 ms.

Minimal Requirements

WFC 2.1: A meter must have a beat cycle.

WFC 2.2: The beats cycle must involve at least two beats.

WFC 2.3: The N cycle may serve as the beat cycle.

Intercycle Relationships

WFC 3.1: All cycles must have the same total period/duration.

WFC 3.2: All cycles must be continuous.

WFC 3.3: The N cycle and all subcycles must begin and end at the same temporal location; that is, they must all be in phase.

WFC 3.4: Each subcycle must connect nonadjacent time points on the next lowest cycle.

Later, London includes more WFCs for unusual meters and non-isochronous microbeats (2012, pp. 128-129):

Regularity Requirements

WFC 4.1.1: If the IOIs on the N cycle are non-isochronous, then the IOIs on the beat cycle must be nominally isochronous (i.e., categorically equivalent, though subject to expressive variation).

WFC 4.1.2: If the IOIs on the N cycle are non-isochronous, their absolute lengths must be such as to avoid ambiguity: (S) must be > $^{1/2}$ (L).

WFC 4.1.3: Sequencing of the NI [non-isochronous] elements on the N cycle will remain constant from beat to beat within the cycle, maintaining maximal evenness.

WFC 4.2.1: If the IOIs on the N cycle are isochronous, then the beat cycle need not be.

WFC 4.2.2: If the beat cycle is NI, then either (1) it is maximally even or (2) the cycle above the beat cycle, in most cases the half measure cycle, must be maximally even.

In order to consider how meter functions in Braff's music, with and without metric-bridges, the metric structures in "Mantra" and "Goodmorning Sincity" are once again examined. However, metric-bridges and how they operate first need further discussion.

Generally, London's criteria for audiating rhythm, his WFCs, can be used to describe Braff's rhythmic approach and process since many of these constraints align with Braff's methods (2012, p. 91). However, both WFC 4.1.1 and WFC 4.2.2 are problematic. The incongruence in WFC 4.2.2 is discussed later through a specific example in "Goodmorning Sincity." WFC 4.1.1 is discussed here: Since Braff's metric-bridges are non-isochronous at both the microbeat and macrobeat levels.

Many of Braff's compositions include metric-bridges with isochronous macrobeats and non-isochronous microbeats, like "Empathy for the Devil." In contrast, some of his compositions contain metric-bridges with both non-isochronous macrobeats and non-isochronous microbeats. "Mantra" and "Goodmorning Sincity" analysed here have examples of metric-bridges such as these. However, there are certain rhythmic properties common to all the metric-bridges that are consistent throughout. These properties may help to establish well-formed constraints to include the possibility of metric-bridges as well-formed meters.

- $(S) > {}^{1/2} (L)$, $(S) < (L)$ and $1 < (L) < 2$.
- The IOI ratio remains constant (all (L) microbeats are equal to one another and all (S) microbeats are equal to one another), gradually and uniformly increases or gradually and uniformly decreases.

- A gradual increase or decrease in the ratio between IOIs is a conscious effort and decision by the performer.
- Exiting the metric-bridge to an isochronous microbeat meter is a conscious decision.
- The IOIs between measures remain equal (allowing for human error).
- Microbeat IOIs are all relatively quick, meaning they all have (S) durations between 100ms and 400ms.

Although the musician audiates the transfiguring pattern constantly, subconsciously holding an unspecific felt ratio to maintain the metric-bridge, they do not have to state every attentional point of that audiation, and it is possible to create rhythmic patterns in the same way one would do so in a normal meter. For this reason, I believe that metric-bridges are, in fact, a special kind of meter. In a metric-bridge meter, isochronous microbeats are replaced by non-isochronous microbeats of (L)'s and (S)'s in a constant ratio at the N cycle level.

Non-isochronous macrobeats occur in a metric-bridge when isochronous microbeats of an unusual meter are non-isochronized (therefore with non-isochronous macrobeats). As we know, in unusual meters, each macrobeat has its own number of isochronous microbeats, causing the non-isochronousness of those macrobeats. In these metric-bridges, each varied macrobeat is being non-isochronized to its own pure tuplet patterns. For example, a 5/8 meter audiated as two macrobeats in the microbeat ratio of 3:2 could have the first macrobeat non-isochronizing towards a 2:1:2 (L) (S) (L) pure tuplet pattern and the second macrobeat non-isochronizing towards a 2:1 (L) (S) pure tuplet pattern.

Generally, the same pure tuplet pattern used for non-isochronizing duplets in a particular metric-bridge would be used for all similar macrobeats consisting of duplets in that metric-bridge. Therefore, one metric-bridge generally would not contain duplet-based macrobeats tending towards 2:1 (L) (S) and 1:2 (S) (L) pure tuplet patterns. The same would be true for all triplet-based macrobeats, quadruplet-based macrobeats and so forth.

There are exceptions to this rule; however, Braff has found audiating such exceptions extremely demanding. One example, where Braff has attempted this, is in the recording of "Berimbau" (Inside, 2011) where, in one measure, the first triplet-based macrobeat tends towards a 2:1:2 pure tuplet pattern, and the second triplet-based macrobeat tends towards a 2:2:1 pure tuplet pattern. Because this kind of audiation is so demanding Braff does not believe it to be generally useful for practical application (Personal communication, Jan 2015).

Meters: WFCs and Mantra/Goodmorning Sincity

When "Mantra" is considered from the perspective of the WFCs some interesting conclusions arise. The microbeat N cycles in the 11/8 sections tend to have IOIs ranging from approximately as low as 115ms at roughly the shortest measure length to around 130ms at the longest measure lengths. These values apply to the metric-bridge between the 7/8 and the 11/8 sections as well. The pure 7/8 measures have N cycle microbeat IOIs ranging from approximately 160ms to 180ms.

However at times, and for very short durations of a measure or less, these microbeats are further divided into duplets, meaning the IOIs halve to less than 100ms (80ms-90ms), incongruent with WFC 1.1. When the pure 15/8 meter is engaged with, the IOIs also fall below the 100ms limit with IOIs around 90ms. Although maintained for slightly longer, three to four measures, this meter is also only present for relatively short moments within the full length of this recording. It is also interesting that, in both incongruent examples, every 'attentional peak' is struck, meaning in 15/8 all 15 microbeats are played, and in the divided microbeats of the 7/8, all 14 notes are played.

Because of the combination of both the relatively short times that these meters are present, and the manner in which they are present, I believe that they are possibly not truly audiated completely as meters in their own right. It is plausible that a musician's ability to rapidly move is beyond their ability to clearly audiate under such extreme conditions, shown through the execution of these meters using every rhythmic note available. It is my opinion, from the evidence presented in this study,

that truly audiated meters allow for the creation of varying rhythm patterns, which is something not seen in this recording. The rest of the recording clearly has multiple rhythm patterns, discussed in more depth below.

"Goodmorning Sincity" follows all of the WFC constraints similarly to "Mantra," once again making an exception for WFC 4.1.1 since metric-bridges are again employed to transfigure from one meter to another. Interestingly, at the point labelled 'G,' the metric structure is not maximally even at the macrobeat level, although the measure lengths are approximately equal. This is in contrast to WFC 4.2.2 since in this meter, labelled as 13/8, three macrobeats per measure could be more equally distributed as one quintuplet macrobeat, and two quadruplet macrobeats, instead of the two quintuplet macrobeats and one triplet macrobeat described and audiated. The measure of this particular 13/8 is, additionally, not maximally even at the half measure point. The N level microbeats have an approximate IOI of 170ms at this point; therefore, the quintuplet beats each have an IOI of approximately 850ms and the triplet macrobeat has an IOI of approximately 510ms.

All of these values fall comfortably within the perceptual ranges outlined by London. At a macrobeat level, where the macrobeats are non-isochronous, the (S) macrobeat is > $^{1/2}$ the (L) macrobeat. Braff's rhythm patterns are generated according to this audiation, which sometimes includes divisions of the microbeats.[44] Based on this evidence, I have concluded that as long as the criteria listed here ((S) > $^{1/2}$ (L) for macrobeats, and IOIs are within an acceptable range for macrobeats and microbeats) is met, it is possible to audiate a stable meter that is not maximally even, as Braff has done in this example. However, meters that are not maximally even will plausibly place more strain on audiation, subject to the discussed audiational limitations, making these kinds of meters more difficult to audiate and, therefore, quite rare. Macrobeats with isochronous microbeats in unusual meters follow the formula J:J+1, proposed by London. J is the number of microbeats per

[44] A clear example of division of microbeats is in the recording of "Empathy for the Devil" where Braff audiates in paired usual quintuple meter and plays divisions of two to each quintuplet in a right hand tremulo (0m23s).

macrobeat in an integer where J ≥ 2. In the special cases of maximally uneven meters discussed here, I propose the formula to be J:J+2 where J is ≥ 5.

At 'H', after completing the transfiguration from 13/8 to what could be seen as 18/8, the first two macrobeats are now comprised of septuplets and the remaining macrobeat of quadruplets. Once again this meter is within the boundaries described above, though closer to the limits of perception, since the N level microbeats now have an IOI of approximately 117ms, meaning the macrobeat IOIs are 819ms and 468ms respectively. This measure could again be seen as maximally uneven.

However, 9/4 meter, labelled arbitrarily by Braff as 9/8 in this case, is evident through the hi-hat pattern at this point. The hi-hat pattern groups every two microbeats, thereby outlining a 9/4 measure. Clearly, through Braff's manner of notation, the measure is more likely audiated as a 9/4 measure with rhythmic patterns resembling the 18/8 macrobeat structure.

It is unclear exactly how each musician audiates the macrobeat structure at this point in the performance. It seems that Braff is audiating three maximally uneven macrobeats in 18/8 as described, and the hi-hat pattern is either displacing in twos to this meter, or creating a new 9 microbeat structure with larger macrobeats. This particular moment is worth noting since it draws attention to some of the vast possibilities that arise through approaching rhythm from Braff's perspective.

Meters: 'Poly' Want a Cracker?

Whether Braff's music is polymetric and polyrhythmic is highly debatable. Expanding on London's definition of polyrhythm, polyrhythmic music has a common periodicity at either the macrobeat level or measure level with multiple, simultaneously occurring periodicities at either the microbeat or macrobeat levels respectively, with

these levels in some non-integer multiple ratios to one another (London, 2012, p. 66).[45]

It seems that there is a need for a hierarchy in the periodic arrangement for music to be considered polyrhythmic: namely that the longer periodicities are always matched with the shorter periodicities in a non-integer ratio. It makes sense that the perceptual limit of five to six seconds, mentioned before, should be considered and applies when determining whether music will be perceived as polyrhythmic in audiation. Different to polyrhythmic music, polymetric music occurs when multiple meters are heard concurrently, where either the hierarchy of polyrhythm is reversed or there is no clearly audiable relationship between the meters.

Generally speaking, the music from *Inside* and "Goodmorning Sincity" will not be considered polymetric according to this definition. Even though multiple meters are present, these meters do share a common pulse, meaning the music is more likely to be polyrhythmic. However, even here the unique temporal-spaces Braff creates in his compositions bend the relationships between the microbeats from the related ends of the metric-bridge that would normally act as non-integer multiples of one another. The warping of the temporal-space allows these microbeats to act more like microbeats that are integer multiples. There certainly are moments in the performances where it appears that the music is truly polyrhythmic. I believe these moments are incidental since their occurrence is not part of the composition's fabric.

Calling Braff's music polyrhythmic is akin to calling a jazz swing tune polyrhythmic because duplets and triplets easily co-exist in the same space. This is certainly possible, but not a convincing argument, since making the duplets non-isochronous relates them more closely to the isochronous triplets. In my own experience, performing non-isochronous duplets with isochronous triplets is a vastly different experience to performing isochronous duplets with isochronous triplets. Much of

[45] This definition of polyrhythm could easily be expanded to include music that has only a set periodicity at the phrase length level (e.g. every two measures) with the faster level measure lengths, macrobeat lengths, or microbeat lengths all differing.

Braff's music can be considered multimetric since compositions like "Goodmorning Sincity" go through multiple changes in meter. However, compositions like "Mantra" may need another definition for clarity since they have more rhythmic dimensions than monorhythmic music, but are different to polyrhythmic music. Perhaps Braff's compositions, and any music that 'swings' in some manner (therefore has a metric-bridge), could be described as multirhythmic, thereby alluding to the extended relationships between the periodic layers.

It should be made clear at this point that both the listener and performer are not, in my opinion, hearing two simultaneous meters occurring when a metric-bridge is being performed. Rather, a metric-bridge allows audiation of a meter with isochronous microbeats from a different perspective, because it utilises specific non-isochronous microbeats. In my own experience, the metric-bridge is a changed perspective, or re-interpretation through a pure tuplet pattern, of isochronous microbeats. My belief, based on London's argument, is that there is a lack of psychological evidence that a single listener (or performer) can simultaneously audiate two meters at once (2012, p. 109).

Summary

Rhythm is perceived within a temporal-space. This temporal-space is created within the listener by that listener metricizing their sonic environment. Through this process, the listener is able to perceive meter as well as rhythmic patterns within the context of that meter. This metricizing and interpretive process further allows the performer to "project temporal regularities and order onto [their] environment" (London, 2012, p. 13). The complete process acts as a repetitive loop of input, creation and output, considered to be rhythmic audiation. The time-scale limitations for audiating rhythmic elements correspond to the time-scale limitations of our sensorimotor system.

Important definitions from this chapter:

- Usual meters: can have two or more macrobeats that are all equal in duration throughout a measure. The macrobeats can include all possible isochronous and non-isochronous microbeat groupings.
- Usual meters: can be further classified as duple, triple, quadruple, etc. with the classification corresponding to the number of microbeats per macrobeat.
- Usual meters: can be classified as combined if different microbeat groupings are used within the meter.
- Doubly Combined meters: are meters with two or more non-isochronous macrobeats where the isochronous microbeats within one macrobeat have a different IOI to any other isochronous microbeats of another macrobeat within the same measure.

Metric-bridges are the central concept to Braff's rhythmic approach and the most important findings in this study are related to this subject. Any meter that has non-isochronous microbeats can be considered a metric-bridge, regardless of whether it has isochronous or non-isochronous macrobeats. Certain restrictions apply to considering a metric-bridge as being present in the music: (S) > $^{1/2}$ (L), (S) < (L) and 1 < (L) < 2; the IOI ratio remains constant (all (L) microbeats are equal to one another and all (S) microbeats are equal to one another), where it gradually and uniformly increases or gradually and uniformly decreases; the IOIs between measures remain equal (allowing for human error). Generally speaking, the non-isochronizing of one kind of microbeat grouping would use the same pure tuplet pattern within one metric-bridge because the mixing pure tuplet patterns for the same microbeat grouping on different macrobeats is difficult to audiate.

Metric-bridges are considered meters in this study because they allow for the audiation of rhythm patterns based on the attentional peaks without stating every attentional peak, as is true for any other meter. Metric-bridges are, therefore, a unique and previously undefined kind of meter that appear to be very useful for extending rhythmic possibilities.

The limitations for audiating various isochronous microbeat groupings are: 150bpm for quadruplets; 120bpm for quintuplets; 100bpm for sextuplets; and 86bpm for septuplets. Audiation limitations for the corresponding non-isochronous microbeat groupings are longer and dependent on the degree of non-isochronization. As the number of macrobeats per microbeat increases, the possible range for the microbeat group as a single macrobeat decreases.

Braff's music and descriptions of his rhythmic approach are congruent with London's WFCs, with the exception of WFC 4.1.1 and 4.2.2. WFC 4.1.1 is incongruent because the metric-bridges formed from Braff's approach can result in meters that are non-isochronous at both macrobeat and microbeat levels simultaneously. WFC 4.2.2 is incongruent because it appears that there is a narrow perceptual range where audiation of meters that are not maximally even can occur.

"Goodmorning Sincity" and the recordings on *Inside* (2011) are not considered polymetric or polyrhythmic. "Goodmorning Sincity" is multimetric. A better description for a composition like "Mantra" may be multirhythmic because of the extended relationships of the different periodic layers within the meter.

Chapter 7

Advanced Rhythmic Techniques: Definitions

Gordon's definitions of music being possibly unimetric, unitemporal, multimetric, or multitemporal, and sometimes combinations of these definitions, are again useful for describing Braff's music. All of these descriptions are of music with only one part, or single-line music. Unimetric music uses the same meter throughout the piece. Multimetric music would have changes in meter within the piece. Unitemporal music has equal macrobeat durations throughout the entire piece. Multitemporal music would have differing macrobeat durations throughout the piece.

Gordon considers unusual meters as multitemporal since macrobeats in unusual meters have different lengths within a measure (2009, p. 134). This statement is in direct opposition to Gordon's earlier statement that "[i]n unusual meters, macrobeats establish meter and microbeats establish tempo" (2009, p. 46). If the second statement is taken as true, rather than the first, then tempo in unusual meters only changes when the measure length changes, or the number of microbeats change within the measure. However, if the first statement is taken as true then Gordon's definition of multitemporality makes Braff's music exceedingly complex to describe due to the sheer number of differing macrobeat durations.

As stated earlier, when Braff audiates unusual meters he can maintain the same macrobeat structure throughout the piece being performed, regardless of the rhythm pattern being imposed. Therefore, the relationship of the measure to the macrobeats and the ratio of the macrobeats to one another can remain constant in audiation throughout an entire piece. Surely if the structure remains constant and audiation of macrobeats to measures does not change throughout a piece, no modulation of tempo has occurred. For this reason, I would argue that Braff's music would also be considered unitemporal in such cases.

Gordon's second definition considers the changed or unchanged duration of macrobeat as the only defining factor in audiation determining the temporality of

the music. He assumes that music that is in unusual meters has varying macrobeats from measure to measure, based on the rhythm patterns being audiated. His belief neglects the possibility of audiating a rhythm pattern that may appear to belong to one macrobeat structure, but is, in fact, being audiated by the performer as belonging to the original meter (Ibid.). For instance, the performer may be audiating a macrobeat structure in 5/8 as three eighth-notes to two, but performing a rhythmic pattern that emphasises two eighth-notes to three. Is it not possible then that the music has remained unitemporal, rather than multitemporal? For this study it will be assumed that it is possible.

In essence, metric modulation occurs when metric audiation changes. These changes can be dramatic or gradual and, for this reason, I suggest the use of two terms for clarity. Metric modulation is defined in this study as when a dramatic change occurs in rhythmic audiation. Metric transfiguration, previously discussed, describes gradual changes in metric audiation, or closely related changes in audiation. For this study I propose a definition of metric modulation that includes all meters we could experience through audiation. If measure duration, macrobeat duration, or the number of macrobeats per measure, or a combination of these, change instantly in audiation, then metric modulation has occurred.[46] Changes to the audiation of microbeats within a macrobeat occur frequently and are considered as transfigurational.

Music that includes more than one part is considered by Gordon to be possibly monometric, monotemporal, polymetric or polytemporal. Music audiated with multiple parts in the same meter is monometric and, if multiple meters occur simultaneously, the music is polymetric. If music includes only one tempo in multiple parts it is considered monotemporal. If music has multiple parts in differing tempos at the same time it is considered multitemporal (2009, pp. 137-138).

[46] A change to the number of macrobeats per measure can be considered as transfigurational as previously discussed.

Again Gordon excludes unusual meters as possibly being monotemporal for the same reasons, as stated above, as applied to unitemporality. By my same argument, for this study unusual meters *will* be considered as possibly being monotemporal, provided that the measure length, and ratio and placement between macrobeats remains constant.

Advanced Rhythmic Techniques: Definitions: Mantra/Goodmorning Sincity

Both "Mantra" and "Goodmorning Sincity" have multiple meters, and varying macrobeat lengths, and can be considered multimetric and multitemporal. The meters occur at any given moment monometrically and monotemporally. Overall, neither recording has any clear rhythmic modulations. "Mantra" has relatively few metric changes when compared with "Goodmorning Sincity." Interestingly though, all metric and temporal changes in both compositions occur through transfiguration.

A closer examination of "Mantra" shows how this is possible. The measure lengths can be considered constant, although fluctuations do occur throughout the performance in this recording. The average measure length is around 1.27s, with extremes around 1.42s and 1.12s for longest and shortest measures. The changes in measure length always occur gradually and are not necessarily because of the use of metric-bridges to change between meters. As could be expected, the shortest measures in this recording are found in the pure 7/8 section towards the end of the recording (from approximately 5m25s).

The isochronous 7/8 measures gradually get shorter from approximately 1.27s to approximately 1.12s at the shortest, not due to any metric changes occurring, since the microbeats in this meter stay purely isochronous during the gradual change in measure length. The change is most likely due to natural performance excitement causing the musicians to gradually 'rush,' especially considering that 7/8 would be more familiar, and therefore easier for the musicians to audiate, creating the possibility for audiating this meter more quickly, despite the appearance of duple divisions of microbeats with very short IOIs.

During the first measure where transfiguration to 11/8 occurs after the isochronous 7/8 section (6m27s), the measure length is again at 1.29s. If the measure lengths in the pure 7/8 section are ignored, then the fluctuations in measure length throughout the recording are relatively small, despite the numerous transfigurations that occur. It becomes clear that no true metric modulations occur throughout this recording. This is because the measure length remains more or less constant, and the most dramatic changes to measure length occur during the audiation of a monometric section (the isochronous 7/8 section) within the recording.

Advanced Rhythmic Techniques: Displacement, Are You One with the One?

For the purposes of this project, displacement is defined as repetitively grouping microbeats into groups or patterns of durations other than the duration of a single macrobeat. Some displacements align with the measure line, but most will not. Displacement is by no means a new rhythmic device and has been employed by many musicians in many different cultures. In a 6/8 measure, audiated as a triple paired usual meter, grouping the triplets in twos would result in what has been called a hemiola, meaning this can be thought of as a simple displacement.

Braff's approach to displacement is well defined. Like many before him, he creates groups out of microbeats as described above. Duplets can be grouped into consecutive threes, fours, fives, etc., triplets can be grouped similarly into twos, fours, fives, etc., and the same applies to quadruplets and so forth. Braff's approach once again leaves the norm when he applies displacement as an improvisational tool in his compositions that use quintuplets as part of the audiated meter. "Empathy for the Devil," "Berimbau" and "Dance of the Fireflies" all have ample examples of displacement utilised this way, as shown below (Inside, 2011). The same is true when Braff applies displacement to septuplets. Braff learns to displace over any microbeat grouping in any meter that is present in his compositions as a means to playing rhythmically more freely in that composition.

Braff has further applied displacement to non-isochronous microbeats occurring while a metric-bridge is being performed. Displacement over non-isochronous

microbeats is heard in jazz over the common non-isochronous duplets. Therefore, the concept is again not new. However, given the nature and extent of Braff's non-isochronous microbeats, the application displacement to non-isochronous quintuplets, for example, is something that has not been done before, to my knowledge, in this way. According to Braff, displacements over non-isochronous microbeats have their own melodic-like tendencies and reinforce, in a way making clear, the macrobeat placement and meter in a way that is unique to this kind of displacement.[47]

Another aspect of displacement that Braff is very specific about, and applies to his own praxis, is the use of the tuplet patterns from his taxonomy for displacement. This kind of displacement is practised with the (L) and (S) elements of the various tuplet patterns in the ratio 2:1. For example, in a 4/4 measure audiated as a quadruple usual meter, Braff would not only practise grouping the microbeats (sixteenth-notes) into consecutive groups of fives, but also into tuplet patterns that are the same length as the consecutive groupings of fives, like (L)-(L)-(S) (therefore sixteenth-notes grouped in a 2:2:1 ratio performed as eighth-note, eighth-note, sixteenth-note), (L)-(S)-(L) (sixteenth-notes grouped in a 2:1:2 ratio performed as eighth-note, sixteenth-note, eighth-note) and so on.

This method of displacement is applied to isochronous and non-isochronous microbeats alike. With non-isochronous microbeats, tuplet patterns are still applied in the ratio of two non-isochronous microbeats to one non-isochronous microbeat. In these cases, the actual durations occurring will not be mathematically relatable to the 2:1 ratio temporally, since the displacements are applied to unequal durations. The specificity of Braff's approach to learning displacement is indicative of the thoroughness with which he approaches rhythmic material and clearly influences the musical results of his performances.

---

[47] I have had a similar experience when applying displacement to non-isochronous microbeats. The resolution of the cycle seems to help the macrobeat feeling, despite the uncertainty of where the measure line is.

Advanced Rhythmic Techniques: Displacement: Some Examples Please?

There are numerous examples of Braff utilising the various kinds of displacement as described above from his recordings. He was clearly already comfortable with the concept of displacing various isochronous microbeats by the time he recorded with the Voltage band. On this album he can be heard executing complicated displacements like the displacement heard at the 4m1s mark on "In Love We Trust" (2010). In this example, he constructs an extended line in which he groups isochronous sextuplets into consecutive groups of five while the rest of the band plays in the quadruplet usual meter of 4/4.

By the time he recorded *Inside*, Braff had become comfortable displacing the non-isochronous microbeats. For example, in the primary metric-bridge of "Mantra" he creates consecutive groups in a (S)-(S)-(L) pattern (therefore the displacing group is the length of four consecutive non-isochronous microbeats) displacing over the total seven non-isochronous microbeats per measure (1m59s); Similarly, he displaces by playing a five-note melodic group over the non-isochronous seven microbeats later in the track (4m52s)(Inside, 2011).

In the same track he displaces by grouping the 15/8 measure into groups of four microbeats. Interestingly, the band initially plays in the 11/8, simultaneous to Braff's 15/8, measure lines matching, before joining Braff at the end of his displaced phrase in the 15 microbeat measure signature (3m24s to 3m34s). This is especially evident from the drummer's fills. Braff displaces with a (S)-(L) three microbeat length duple pattern in 11/8 at 4m11s. The diversity in the use of displacement in "Mantra" shows the progress in utilising this concept that Braff made in the time between recording *Voltage* (2010) and *Inside* (2011).

By the time the analysed version of "Goodmorning Sincity" was recorded, Braff's use of displacement was even more sophisticated. In this recording, he is heard utilising fragments of various displacements in conjunction with one another, thereby creating rhythmic material that does not meet the measure line, but which is also not as predictable as purely displaced patterns.

For example, at 1m42s, whilst in an isochronous paired unusual 7/8, Braff displaces by grouping the microbeats as follows: 2:2:2:2:3:4:3:3:3, creating tension and eventually resolving again onto the measure line. At 2m41s Braff completes the transfiguration across the metric-bridge from 7/8 to 11/8 by displacing in groups of two notes in the isochronous 11/8 before the band completely transfigures, continuing the displacement after the transfiguration is complete. Braff's improvised solo utilises various displacements extensively, such as the five-note grouping over the quadruplet microbeats at 3m53s, or moments later the repeated chord on the first note of a three note grouping over the same quadruplet microbeat structure at 4m3s.

Displacement using tuplet patterns also makes numerous appearances in this recording. For example, at 4m47s, a five-note microbeat duration grouping in the pattern (S)-(S)-(S)-(L) is used. Similarly, at 5m29s the same pattern is used in conjunction with a (L)-(S)-(L) pattern, again over quadruplets. Clearly, over time, Braff has again extended his skill at applying displacement to his repertoire from his earlier recordings.

Advanced Rhythmic Techniques: Advanced Displacement Techniques

Braff further utilises displacement to metrically modulate. This is a relatively standard and known approach to metric modulation used by Braff and other musicians alike. For metric modulation to occur, consecutive groups, of any type of displacement previously described, become macrobeats in audiation, creating a new metric grid in audiation. For clarity, in cases where this audiational change occurs, but the measure line remains constant, metric transfiguration rather than metric modulation will have taken place. However, when a displaced pattern or grouping is

taken to be the new macrobeat duration, and the measure line shifts, meaning the length of the measure changes, metric modulation occurs.[48]

When a metric-bridge is audiated, displacement can be applied to the non-isochronous microbeats, as well as to either related meter, meaning the rhythmic modulation possibilities in Braff's music are greater than in music without metric-bridges. Another further extension of metric-bridge possibilities happens once metric modulation due to displacement has occurred: if the displacement occurred because of a regrouping of the microbeats, a new metric-bridge can be audiated with the possibility of non-isochronizing the microbeats as previously described. The same process in reverse can occur when metric modulation has occurred because of displacement due to one of Braff's tuplet rhythm patterns. In such a case, the tuplet pattern would gradually be isochronized.

By combining metric-bridges with displacement it becomes possible for the musician to rhythmically modulate to any new temporal-space they wish to, provided they have the audiational ability to execute the change. More than that, Braff has created, through this approach, a practical means for musicians to actively train these changes should they wish to. No clear examples of Braff utilising displacements for metric modulations are heard in the recordings analysed for this study. However, during the time he spent training me he demonstrated examples of this displacement-modulation and explained how it can be done (Personal communication, Jan 2015).

In improvisation, Braff has disclosed one more advanced possible application for metric-bridges used in conjunction with displacement. When a performer displaces in improvisation through a tuplet pattern it is possible to isochronize the notes of that pattern through a metric-bridge-like process. It is not clear exactly how this is executed; however, I believe that the performer would have to be very comfortable

[48] In the case that the measure after such a rhythmic shift is exactly double the length of the original measure, transfiguration, rather than modulation, has occurred. This may be true of other shifts in exact integer ratios of measure duration changes.

with audiating and holding a metrically modulated macrobeat (through the displacement), against the original macrobeat audiated by the other musicians in the shared performance. The newly modulated macrobeat occurs because of the performer's ability to isochronize the pure tuplet pattern.

A performer who is able to do this is able to play rhythmic material seemingly unrelated to the original rhythmic material, but still remain connected and aware of the original rhythmic material. I suggest that this is one way to play rhythmically 'outside' akin to the way jazz musicians often play harmonically 'outside.' Braff says that under the right conditions he is able to achieve this advanced state of improvisation while performing.

Furthermore, through isochronizing pure tuplet patterns it becomes possible to superimpose one isochronously divided duration over another isochronously divided duration. For example, seven isochronous strokes superimposed over four isochronous strokes can be achieved through the improviser gradually isochronizing a quadruplet tuplet pattern in the ratio of 2:2:1:2 over the full length of a 7/8 measure. The measure would most likely have to be audiated as a single pulse for this to be achieved.

Advanced Rhythmic Techniques: A 'How To' Guide

Braff learns to audiate displacement similarly to how he learns to audiate macrobeats, microbeats and tuplet patterns, as described before. While audiating a strong pulse feeling and tapping out the microbeats or tuplet patterns he creates consecutive displacing groups. One way he achieves this is through emphasising displacement-grouping beginnings with increased motions that create rhythmic accents. Generally, these motions are first applied to a single tone or surface until he is comfortable with the specific displacement being learned. He then applies the same displacement grouping to multiple surfaces of differing tones that emphasise the displacement grouping rather than the macrobeat or measure structure.

While working on displacement, Braff describes the need to, in a sense, switch off his ears and engage only with his bodily motions. For example he, suggests learning a five-note displacement by tapping five single strokes on five different surfaces, one surface per stroke. While doing so, one should audiate any microbeats other than quintuplets. The simplest way to do so is by creating a strong pulse feeling corresponding to the macrobeats of the desired audiated meter while tapping on the five different surfaces to create the displacement.

On the piano, Braff suggests a similar approach using the fact that most of us have five fingers on a hand, and playing them in a set sequence, while maintaining the pulse feeling. While learning displacement, bodily motion is easier to focus on than the tonal confusion resulting from hearing displaced tonal fragments. Once the displacement becomes easy from a bodily perspective Braff suggests slowly re-engaging one's ears tonally until the rhythmically displaced result is no longer tonally confusing and the displacement is heard in a tonal context.

Advanced Rhythmic Techniques: Algorithm

Braff further extends the use of body motion beyond displacement into what he sees as musical algorithm. Algorithmic thinking can be applied to any musical level and can be layered. Simply put, musical algorithms require application of a process or set of rules to musical information, much like mathematical algorithms. For example, a simple algorithm would be accenting every second note performed, regardless of any other musical data. Braff has extensively practised his ability to spontaneously create algorithmic situations in his improvisations in order to further master rhythmic material and gain more freedom in his improvisations.

The following example illustrates one way in which Braff may create a layered algorithmic situation in an improvisation: using a hypothetical situation possible in "Empathy for the Devil" as a basis, a quintuple usual meter of 10/8 can be audiated. Braff may decide to play a three-note displacement in a (L)-(S) tuplet pattern. This pattern could be executed as a C minor triad in first inversion with his right hand while in this Dorian scalar setting. His left hand plays a constant interval of a fifth on

the fourth quintuplet in each macrobeat releasing by the onset of the following macrobeat.

This displacement can already be seen as an algorithm, but Braff could then add layers to this. For example, he may decide to play the triad twice and then repeatedly move up the scale in a constant structure of first inversion triads, always playing each triad twice before moving up. He could utilise tones from the scale to form each sequential triad, thereby adding one more algorithmic layer. Another layer would be to limit this movement to only four notes up the scale before returning to the first note and repeating the process. He may add a layer in which every third stroke is accented whilst maintaining the other layers of the algorithm, and a further layer of crescendoing from pp to ff and back constantly.

Braff says that because of training himself in this manner for some time he is able to now spontaneously add algorithmic layers, without preparation or planning, while improvising. The major advantage of this manner of thinking is that it requires less mental energy, being that each level of algorithm is quite simple to describe. The musical results, however, are generally rich, aurally interesting and complex sounding. It could easily take many pages of writing to replicate a full algorithmic process, if the full cycle of the algorithmic processes is written out note for note. In such an example, pages of musical results can be explained through a couple of simple algorithmic instructions.

Summary

Unusual meters are considered unitemporal when the macrobeat structure and the IOIs of both microbeats and measures remain constant throughout a composition. Similarly, unusual meters can be monotemporal if multiple, simultaneously occurring parts are based on the same unchanging unusual meter.

Metric modulation occurs when instant and dramatic audiational changes occur that cannot be considered transfigurational. Metric-modulational changes include

changes to: measure duration, macrobeat duration, or the number of macrobeats per measure, or a combination of these.

“Mantra” and “Goodmorning Sincity” are both multimetric and multitemporal. The meters in both the recordings of both compositions appear monometrically and monotemporally at any given moment. In both recordings, all metric changes occur transfigurationally, not through metric modulations.

Displacement: repetitively grouping microbeats into groups or patterns of durations other than the duration of a single macrobeat of a set meter.

Braff creates displacements through grouping microbeats by chosen integer amounts and by applying his pure tuplet patterns to the microbeats of a meter. He applies displacement to all meters described in this study. Distinguishingly, he applies displacements to meters that require the audiation of microbeat groupings more numerous than quadruplets, and to all his metric-bridge meters. He is able to create complex phrases through stringing multiple kinds of displacements together. He has various methods to achieve the audiation of displacements for all contexts discussed here. Most of these methods are highly physical, requiring movements that emphasise the pulse feeling on the macrobeats and tapping his hands on surfaces.

Braff is able to metrically modulate through the use of displacement. He does so using any of his displacements by shifting his macrobeat perception from the original macrobeat to the displacement grouping, using one displaced group as the newly audiated macrobeat. Since displacement can be applied to any of the meters discussed here, it becomes theoretically possible for a performer to metrically modulate, through this technique, from any audiable meter to another, provided they have the required skill.

Through isochronizing a displacement that occurs because of the use of a pure tuplet pattern, a performer appears to be playing in a meter that seems to oppose the underlying meter. The isochronizing of tuplet patterns can further allow a performer

to play one metric grouping against another. This is useful when the performer wishes to create a situation where one isochronously divided duration has fewer or more attentional points than another isochronously divided duration, and the attentional points do not synchronize metrically between the two durations.

Braff uses algorithmic thinking to create complex and interesting musical results. Algorithm is defined here as applying a process or set of rules to musical information. The process can be applied to any musical element and the algorithmic process can have any conceivable parameters.

Conclusion

What Kind of Musician is Braff?

In this study I have found that Braff has been primarily and strongly influenced by Western classical music and training, Afro-American gospel and Christian hymns, progressive rock of the 1970's, jazz, freely improvised music, and West African musicians. Due to this wide influence base it is difficult to pigeonhole Braff into one classification, besides considering him as a Western improvisational and experimental musician primarily in the rhythmic field. He has performed at a high level in almost all of these musical contexts. His personal feeling matches a general classification since he feels no particular affinity to any one style or genre of music.

Through his multiple influences, Braff has become a well-rounded musician with a clear focus on improvisation. This is evident through his level of musical proficiency. He has a well-developed harmonic language that relates well to both classical and jazz contexts, with a deeply formed understanding of the scales, melodic constructions, and tonal relationships important in these genres. He has a well-developed concept of musical forms, from relatively short musical forms within a composition, like vamps, to cyclical forms, to free forms, to long compositions with complex forms, to full concerts as another form. He has developed a high instrumental proficiency at the piano, and has a well-developed sense of the various roles of Western instruments.

Overall, he has explored and become proficient at various kinds of Western improvisation, and even explored improvisational techniques from other cultures. His music appears to be the result of a successful amalgamation of his major influences with clear elements of each showing up in his creative output and conceptual thinking. The main focus of this study, however, has been his rhythmic proficiency and his contribution to our rhythmic understanding.

This research has shown the important role that spirituality plays in Braff's life and musical approach. Improvisation is, for Braff, the primary and most effective way to musically access his spirituality. We have seen that his spiritual philosophies apply equally to his music and his life, with one of the main aims being to be in the 'now' and having fun at all times. One of his aims while creating music is entering a trance-state, which for him is the main way to have fun and achieve 'nowness' at the same time. We have seen how his use of:

- vamp sections;
- analogue and acoustic, rather than digital, sound sources;
- digitally controlled analogue sound processes;
- single harmonies in modal settings for improvisational contexts;
- the audience as a means to add the 'right' kind of pressure;
- music as a process rather than a product; and
- the non-isochronous microbeats of metric-bridges to increase the pulse experience

all having the singular aim of creating a deeper trance-state while performing.

We have further seen that trance-states are, in some way, a feature of Braff's musical influences listed above, and that he seems drawn to explore such kinds of music. Even his artistic aims are rooted in Eastern philosophies regarding the process of 'being' while doing. His music has proven to include ritualistic elements in his creation of 'sacred time' and 'sacred space' situations when performing.

We have further seen that Braff is a man of many theories. Generally, his theories have a spiritual undertone dealing with human experience. Another property of his theories is that they tend to be quite general, looking at broader experiences or properties of the subject. These theories studied here include:

1. The theory of vertical and horizontal musical structures as functions of unity or individuality respectively;
2. The theory of the empathetic experience had by observers, especially with regard to audience experience;

3. The theory relating the properties of musical tonality and metricality to one another;
4. The theory of the musician being able to perceive their 'self-sound-image' while performing and the limiting effects of using indirect sound sources on that perception. Such limitations restrict the musician's ability to enter a trance-state.

We have further seen that there appears to be some validity to these theories; enough validity that they could become studies of their own. The first theory is plausible because vertical structures require less thought and allow for more observation. However, this theory has the least scientific backing in this study.

The second theory seems valid when considering the findings of the various studies that discuss our cognitive responses to musical stimuli. These responses affect our perceptions and experiences of the music, even causing sensorimotor perceptions of the music. We perceive the motions of the observed musician as part of their sonic image. Our perceptions further affect our fellow observers' perceptions. Lastly we project, especially as the performer/s, outward onto the sonic environment because of our perceptions, creating a feedback loop.

Similar reasoning makes the fourth theory plausible. This is because the sound source and the rhythmic information is responsible for the sonic image. If the musician is not in direct control of creating the vibrations that are perceived, meaning there are other processes present before the sound wave is created, that musician's sound image is altered. That sound image forms part of the musician's feedback loop. Since his/her perception is altered, the musician perceives an externally altered reality when compared with their internally audiated reality, making it more difficult to enter a trance-state.

The third theory discussed certainly shows some interesting possibilities. If the rhythmic realm truly does function in the same way as the tonal realm does, many interesting possibilities arise. New approaches to composition and the general conception of musical material could very well occur. At this stage, this theory is

seemingly too undeveloped to truly have a major impact on the music world. The most significant findings seem to be that the rhythmic partials can be thought of as divisions of a pulse, and these can be tempered, and difficulties arise when two musicians play together while audiating a different macrobeat duration. This particular Braffian theory needs further investigation to determine the validity and usefulness.

Braff's constant moving around as a child, always between cultures, is very much like his musical process, particularly regarding his rhythmic approach. His lack of affinity to any particular style or genre of music has kept him free and un-dogmatic, and allowed him to freely follow his interests more than following any trends. His metric-bridges are, likewise, between two meters, having traits of both meters, but truly representing neither. His musical experimentation seems to always have an undertone of breaking away from the norm, going beyond the boundaries, again outside of cultural or social borders. Similarly, his spirituality, both within his music and outside of it, is aimed at encompassing all things, and being a part of all things, in the present, outside of the rules of strict religions or belief systems. Spiritually and musically he seems to be constantly searching for an overarching truth reflected by his theories.

Braff's Rhythmic Approach in Relation to Already Defined Approaches

This study has revealed that Braff's rhythmic approach is undeniably Western in origin. He defines rhythmic elements in Western terms from established Western conceptions of rhythm. This includes his use of structures in form, measures, meters, macrobeats, microbeats, divisions of microbeats, isochronous and non-isochronous microbeats, displacements, metric modulations, transfigurations and rhythm patterns.

We have further seen that his concept of musical time fits within a spectrum of music that, although heavily influenced by African concepts, is Western. His concept of musical time strives to be universal by encompassing the concept that musical time should be well defined and precise in the moment, but should also be

constantly relatable to any other musical time. In a manner, Braff's music has proven to achieve this ideal through processes involving metric-bridges and displacements.

Many of the rhythmic concepts and experiences that inspired Braff to explore his music experimentally came from his interactions with Western African musicians. We have seen that most of these same concepts are present in the Western canon, though presented differently. These include:

- Macrobeats in a metric cycle that 'resolves to,' rather than 'is generated from;
- Microbeats the resolve to an upcoming macrobeat rather than being generated from a previous macrobeat;
- Rhythmic elements operating in interacting layers of perception.

His interactions with Yaya Ouattara, in particular, started his experimentation with non-isochronous microbeats. We have seen how Braff's approach to non-isochronizing microbeats can describe other known non-isochronous microbeat groups, including jazz duplets, Onawan triplets and Brazilian quadruplets.

Braff's time with Ouattara further inspired him to experiment with dissociating his perception of meter from tonality. We have seen that Braff's description in this regard is valid since the cognitive research used in this study argues for such a perceptual connection between meter and tonality in Western music. Braff's failure to truly dissociate these two perceptions raises interesting questions for future study. Questions like: Does the perceptual link between meter and tonality act as one defining factor in Western music? Does this same link not exist in Indian or African music? What is the nature of the relationship between tonality and meter?

As far as more advanced rhythmic concepts are concerned, we have seen again that Braff's descriptions are possible and match the descriptions of the rhythmic framework created to interrogate his rhythmic approach. These advanced descriptions include:

- Braff's limitations on non-isochronous microbeats and non-isochronous macrobeats for ease of audiation: (S)> $^{1/2}$ (L).
- The perceptual ranges that Braff describes macrobeats and microbeats in. These ranges are not always the most comfortably audiated; though, in the examples studied, they always fall in the 'possible' range of perception.
- Braff's descriptions of how he uses unfamiliar microbeat groupings as part of the metric structure, such as quintuplets, sextuplets and septuplets.
- Braff's effective use of rhythmic displacements, metric modulations and transfigurations.

Braff's descriptions of how to master specific rhythmic material through physical training, including clear bodily motions, appear valid. We have seen that he is very precise and prescriptive about how he achieves rhythmic mastery over any specific element. His practice methods appear valid and useful when compared to the rhythmic cognition theories and studies used for this study.

Overall, I have found nothing that contradicts current cognitive theory around audiation of rhythm when compared to Braff's rhythmic approach or descriptions thereof. Additionally, I have not found unexplainable discrepancies between his rhythmic approach, and descriptions thereof, and currently accepted descriptions of rhythmic elements. Where discrepancies have occurred, it appears that Braff's approach has extended current theory and praxis, rather than contradicted it.

Braff's trials at stretching his perceptual link between metric and tonality, discussed and described in this study, seem to be the weakest aspect of his rhythmic approach. Although, interestingly, there is no clear evidence in his creative output, particularly in his recordings, of his use of most of these techniques. Perhaps Braff himself has found these techniques less useful.

However, one perception stretching technique, that of anticipating or delaying the harmonic resolution by varying amounts, has found root in Braff's performances and recordings. Evidence for only this technique was found in a number of his recordings in this study, creating the impression that it is the only really useful technique of

those discussed. However, this finding could be due to the approach taken in this study. The other techniques discussed in this regard may be useful, but would require further investigation for validation and classification.

Does Braff's Rhythmic Approach Extend Current Rhythmic Theory and Praxis?

Probably the most significant finding of this study is the existence of metric-bridges in Braff's rhythmic approach and recorded performances. Metric-bridges appear to be a newly defined kind of meter that always has non-isochronous microbeats, and can have non-isochronous macrobeats simultaneously, which was believed impossible according to the theorists utilised in this study. It is through metric-bridges that Braff is able to non-isochronize any microbeat grouping.

At the root of the non-isochronizing process in Braff's approach is his pure tuplet pattern taxonomy. This taxonomy is a critical element in Braff's rhythmic approach. The limitations placed on this taxonomy make it extensive enough, but not so extensive as to make it unusable. If Braff's approach is followed, and this taxonomy is applied in rhythmic training, his taxonomy allows for a relatively simple, yet thorough, and extensive practical assimilation of most, if not all, Western rhythmic concepts discussed. The pure tuplet patterns further allow for an extension to more usual Western concepts.

This study has explored how Braff successfully uses these pure tuplet patterns in a number of ways. These include:

- As a way to learn all possible rhythmic patterns that can be constructed in a meter from macrobeat to macrobeat, thereby mastering the particular possible microbeat patterns of a meter within the duration of one macrobeat.
- The ability to non-isochronize any isochronous microbeat group in multiple ways, dependant on the possibilities presented by that microbeat group. Furthermore, the process of doing so creates the metric-bridges.

- As a way to extend the practice of displacing rhythmic material by creating displaced groups out of pure tuplet patterns.
- As a way of learning to superimpose one isochronous group onto another through a process of isochronizing a pure tuplet pattern.

It is entirely possible that these tuplet patterns could be found useful in other ways not explored in this study.

Metric-bridges have peculiar properties. These properties seem to fascinate and inspire Braff, since much of his work, creative output, experimentation and discussions explored in this study make use of metric-bridges. These properties include:

- Connecting one meter with isochronous microbeats to another meter with isochronous microbeats.
- Allowing the harmonious use of rhythmic material from both related meters, while allowing the use of rhythmic material only in existence in the metric-bridge because it additionally acts as its own meter.
- Extending the possible ways that a performer can express a meter through the gradual or rapid altering of a temporal-space by altering the macrobeat shape (or the macrobeat 'waves') to suit a performer's expressive desires.
- A perceived increase in the experience pulse feeling of the macrobeats.

Besides for these curious qualities of metric-bridges, it is their usefulness when combined with the other more familiar rhythmic concepts and techniques that truly adds to current concepts of rhythmic possibility. This is particularly true when combining the metric-bridges with displacements, metric modulations, and all forms of transfiguration. The combined effect of using these rhythmic devices in conjunction allows for the connection from any meter to any other, flowing from any temporal-space to any other, and the freedom to express oneself rhythmically, in any temporal-space, with a high degree of freedom and control simultaneously.

Besides for the invention of metric-bridges, essentially a unique way of approaching non-isochronization, it is probably the way that Braff has combined all the rhythmic

devices discussed in this study into his approach that sets him apart. By doing so, he has not only shown that it is possible to achieve this rhythmic proficiency from his approach, but also how useful it is to do so through his creative output. Adding the algorithmic approach to his music is merely the cherry on top of a well thought out, well developed, well described, and well executed rhythmic approach.

My Experience with the Braffian Approach

Understanding the Braffian rhythmic approach was not a simple matter for me. At first I attempted, for an extended period of almost two years, to understand it mostly through logic and mathematical thinking. This approach informed the practical components that I worked on at the time, like quintuplets and so forth. It was only during the time, after the initial two-year period, when I actually studied the concepts with Braff, working and learning from him experientially as well, that I realised how little of the approach I understood. It was also during this time that I finally learned how to practically achieve some of the results rhythmically that he achieves through his approach. This time laid the foundation for later furthering my understanding and skill at his rhythmic approach.

However, there were still gaps in my understanding that prevented me from progressing as easily as I believed I could. Thankfully, these gaps were filled primarily through the extensive research into what we know about rhythmic cognition and rhythm that has been done for this study. Every time I found and understood a new aspect regarding rhythm or the cognition thereof, I immediately tested it on myself, in conjunction with, and as a means to further understand, the Braffian rhythmic approach. The results have not only proved useful in my own creative output, but also in helping friends and colleagues that have had similar questions and struggles rhythmically.

I found physically working on the concepts, by tapping on various surfaces while stepping macrobeat structures as the start to learning these concepts, most useful. None of the other attempted methods I employed, such as counting out the rhythms with various counting systems, were nearly as successful. I would, therefore, strongly

advise anyone attempting to learn Braffian rhythmic concepts, or any rhythmic concepts for that matter, to do so through strong, clear bodily motions that simultaneously create the various layers of rhythmic audiation discussed in this study. I would recommend that the macrobeat structure, microbeat structure and rhythm pattern all be present in some way in the practice.

I am still very much engaged with learning from Braff's rhythmic approach, and the studies into rhythm dealt with in this study, and plan on continuing this process for some time. That being said, I have found that through my own use of metric-bridges, practising of various displacements, experimenting with pure tuplet patterns in the various ways discussed here, algorithmic thinking, and most of the other devices and approaches discussed in this study, I have sorted out the basic rhythmic deficiencies I had (and there were many when I started this process).

More than that, I am now able to deal with all the rhythmic landscapes in the performance world that I find myself in with relative ease, and am even able to create and access conceptually challenging rhythmic material in improvisations and compositions that I would never have deemed possible before. As was seen in my recital performance that was part of this study, I am further able to authentically perform some of Braff's compositions and purely use his concepts in live performance and for arranging purposes. I have found the Braffian concepts especially useful for expanding my own improvisational language and skill.

I can comfortably state that I have access to aspects of rhythmic freedom and expression that I do not typically hear from performers in the South African music industry, particularly with regard to non-isochronizing microbeats. I say this while being fully aware that I am still in the beginning stages of learning to apply Braff's rhythmic approach practically. Therefore, it is my opinion that Braff's approach is truly transformative in the development of rhythmic skill in Western music and possibly aspects of world music today. Braff's rhythmic approach certainly warrants further investigation.

Reference List

Agawu, K. (2004).How We Got Out of Analysis, and How We Get Back In Again. *Music Analysis, 23,* 267-286.

Bailey, D. (1980). *Improvisation: it's nature and practice in music* (2nd Edition ed.). Ashbourne, Derbyshire, England: Moorland Pub. in association with Incus Records.

Berliner, P. F. (1994). *Thinking in Jazz: The Infinite Art of Improvisation.* Chicago and London: The Univeristy of Chicago Press.

Blaser, S. (n.d.). *http://www.samuelblaser.com*. (2 Worlds Interactive) Retrieved 02 24, 2016, from http://www.samuelblaser.com: http://www.samuelblaser.com

Paul Bley, E. P. (Performer). (1995). On *Time Will Tell* [CD]. ECM.

Boyer, H. C. (1979). Contemporary Gospel Music. *The Black Perspective in Music , 1*, 5-58.

Braff, G. n.-Ä. (2010, 08 16). *Gravity never plays - Ärtonwall feat. Malcolm Braff* . Retrieved 12 01, 2015, from YouTube: https://www.youtube.com/watch?v=XVqSOqglkf4

Braff, M. (Composer). (2000). [M. Braff, Performer] On *Solo Live in Lausanne*.

(2005). On *Not for Sale*.

Braff, M. (2014, September 01). Retrieved December 10, 2015, from YouTube.com: https://www.youtube.com/watch?v=N3n18w1VruM&spfreload=10

Braff, M. (Composer). (1991). Aucune Idée encore. On *Aucune Idée encore*. Lausanne, Switzerland: VDE-Gallo.

Braff, M. (Composer). (1996). Axor-Kompositionen. On *Axor-Kompositionen*.

Braff, M. (2013, June/July 26-02). Grahamstown Conversations. (A. interview, Interviewer) South Africa.

Braff, M. (2014, 04 04). *GREENWOMAN's Cancan (yes we do)*. Retrieved 01 10, 2016, from Youtube.com: https://www.youtube.com/watch?v=_C2K0znO0o0

Braff, M. (Composer). (1994). Icare. On *Icare*.

Braff, M. (Composer). (2011). Inside. [M. Braff, Performer] M. Winckelmann.

Braff, M. (2015, February 7). Interview 1. (D. d. Wet, Interviewer)

Braff, M. (2015, 02 13). Interview 2. (D. d. Wet, Interviewer)

Braff, M. (Performer). (1992). Kumbaya.

Braff, M. (2002). Levitation #1.

Braff, M. (Composer). (2005). Live à Cully. [TNT, Performer] On *Live à Cully*.

Braff, M. (Composer). (2001). Live à l'EJMA. On *Live à l'EJMA*.

Braff, M. (Composer). (2000). The Preacher. On *The Preacher*.

Braff, M. (Composer). (2005). TNT Live à Cully. On *TNT Live à Cully*.

Braff, M. (Composer). (1999). Together. On *Together*.

Braff, M. (Composer). (2010). Voltage. [M. Braff, Performer] On *Voltage*.

Braff, M. (Composer). (2008). Walkabout. On *Walkabout*.

Cardew, C. (1971). *Treatise Handbook.* Michigan: Edition Peters.

ECM. (n.d.). *Advanced Search: Barre Phillips*. (ECM) Retrieved 02 26, 2016, from https://www.ecmrecords.com/search-advanced/Barre%20Phillips

Gordon, E. E. (2009). *Rhythm: Contrasting the Implications of Audation and Notation* (2nd ed.). Chicago, USA: GIA Publications, Inc.

Grove's Dictionaries Inc (Organisation) (2002). *The New Grove Dictionary of Jazz* (2nd ed.). London, England: Macmillan.

Herrigel, E. (1953). *Zen in the Art of Archery* (Reprint ed.). Pantheon Books.

http://www.drummerworld.com/drummers/Julio_Barreto.html. (1997-2014). Retrieved Feb 16, 2016, from Drummerworld: http://www.drummerworld.com/drummers/Julio_Barreto.html

Iyer, V. (2002). Embodied Mind, Situated Cognition and Expressive Microtiming in African-American Music. *Music Perception: An Interdisciplinary Journal* , 387-414.

Iyer, V. (2004). Exploding the Narrative in Jazz Improvisation. In V. Iyer, *Uptown Conversation: The New Jazz Studies* (pp. 393-403). New York: Columbia University Press.

Jarrett, K. (Performer). (1975). On *The Köln Concert (Live)*. ECM.

Kernfeld, B. (1995). *What to Listen For in Jazz*. New York, USA: Yale University.

Levine, M. (1989). *The Jazz Piano Book.* Petaluma: Sher Music Co.

London, J. (2012). *Hearing In Time: Psychological Aspects of Musical Meter* (2nd ed.). New York: Oxford University Press.

Macan, E. (1997). *Rocking the Classics.* New York, New York, USA: Oxford University Press.

Mack, L. (2011). Seventh-day Adventist Hymnody. In J. Watson, *Canterbury dictionary of Hymnology* (http://www.hymnology.co.uk/s/seventh-day-adventist-hymnody ed.). Michigan: Cantebury Press.

McGill, D. (2007). *Sound in Motion.* Bloomington, Indiana, USA: Indiana University Press.

Marsalis, W. (Performer). (1987). On *Marsalis Standard Time, Vol. 1.* Sony Music Entertainment Inc.

Millard, A. (2004). *The Electric Guitar.* Baltimor, Maryland: The John Hopkins University Press.

Neuhaus, H. (1973). *The Art of Piano Playing* (2nd, illustrated, reprint ed.). Kahn & Averill.

Oliveros, P. (2004). Harmonic Anatomy: Women in Improvisation. In D. F. Heble, *The Other Side of Nowhere* (pp. 50-70). Middletown, Connecticut, USA: Wesleyab University Press.

Pepi-Alos, J. (n.d.). *Discografia*. Retrieved 03 02, 2017, from www.jogepepialos.com: http://www.jorgepepialos.com/principal/index.php?option=com_content&view=article&id=6&Itemid=9

Said, E. W. (1995). *Orientalism.* England: Penguin Books.

Shipton, A. (2002). *A New History of Jazz.* London/New York, Uk/USA: Bayou Press Ltd.

Smith, L. (1973). *Notes: 8 Pieces.* Leo Smith.

Wicke, P. (1990). *Rock Music: Culture, aesthetics and sociology.* New York, New York, USA: Cambridge University Press.

William-Jones, P. (1975). Afro-American Gospel Music: A Chrystallization of the Black Aesthetic. *Ethnomusicology , 19* (3), 373-385.

Wilson, P. N. (2000). Living Time: Ancient to the Future. *Amerikastudien / American Studies , 45* (4), 567-574.

Appendix

Attached is a full transcription of the first and second interviews in a separate document. Further included are the recordings utilized for analysis and the analyses of these recordings where suitable. Should any other resource be required please contact the author at www.watermelloman@hotmail.com.