UNIVERSITY OF CALIFORNIA

SANTA CRUZ

TEMPO EXCURSIONS FROM JAVA TO JAMAICA

A thesis submitted in partial satisfaction
of the requirements for the degree of

MASTER OF ARTS

in

MUSIC

by

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Abstract:

Tempo Excursions from Java to Jamaica
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Three pieces of music: *Temper Temper Time*, *Shepard,* and *Faux-Java Blues* form a set that exploits experimental applications of unusual musical features: 5/4 tempo relationships and quintuple divisions; tempo spirals and expanded rock harmony and voice leading; and Indonesian/Western hybridity respectively. Elements of my compositional aesthetic, process, history, knowledge, and skills have contributed to the composition of these pieces, including the influence of popular music, Javanese music, recording technology, and tuning theory.

Dedication

To Yoda Schultz and all the people who have loved him

as I have over the last 16 years.

Acknowledgments

Thanks to David Evan Jones, Paul Nauert, Larry Polansky, Ben Carson, Bill Coulter, James Durland, John Sackett, David Cope, Fred Squatrito. Undang Sumarna, Linda Burman-Hall, Leta Miller, Tanya Merchant and Robin Macomber for being part of my musical education.

All the players from my recital and studio recordings: Max Nied, Kai Kopecky, Ray Fernando, Jennifer Beaver, Nikki Mokover, John Bissett, Vincent Zayek,William Long, Kellie Bryant, Jen Lependorf, Elena Pagter, Lucas Turner, Brandon Yu, Jessica Loranger, Mike Knorr, James Thomas, George Narlesky, Simon Northall, Patrick Ferraro.

José Pablo Gaona, Mom, Dad, Tobias, Luc, Wiley, Hanna, Lucien, Ben, Joe, Ann, Bill, Shelby, Grandma Susan, Patrick Andrews, Jeremy Cross, Yoda and Llorna for being part of my life.

Introduction

This thesis consists of three pieces, composed between June 2011 and February 2012 but with roots in work going back several years. These pieces do not so much represent a culmination of this work as just a few instantiations of the myriad ideas I've explored and will continue to explore in years to come—the tip of the iceberg as it were, sculpted into something that I hope will pass for a thesis.

My inspiration as a musician and a composer has always been popular music, with the music of the Beatles, Led Zeppelin, Metallica, and Tool influencing me in particular. I have extensively studied the harmonic, melodic, and rhythmic structures of rock/pop music and one of my interests as a composer is in exploring and "expanding" the musical materials of these idioms. Much of the harmonic/melodic vocabulary in my music is based on chromaticizing rock harmony in much the same way that 19th-century composers progressively chromaticized relatively simple 18th-century harmony. However, my real focus has been on complex rhythmic/metric structures, notably tempo modulations, cross rhythms, and tempo spirals. The music of Led Zeppelin, Tool, and of Indonesia, supplies idiomatic uses of these devices that have inspired me and this thesis is particularly focused on expanding these rhythmic

ideas. The more complicated rhythmic ideas of composers like Conlon Nancarrow, Henry Cowell, and Elliot Carter have also influenced me considerably, but overall contemporary "art" music has never been of great interest to me.

In my music I seek a balance of novelty and tradition. I generally experiment with only one feature of the music at time: where I have a novel rhythmic idea to explore I keep the harmonic and melodic material simple and well rooted in idiomatic conventions; conversely if I were to write a 12-tone serial piece or in a experimental tuning I would keep the rhythmic/metric framework conventional and repetitive. The idiomatic easiness of some of the material creates a framework for the listener to understand the music—something to latch on to—even as the experimental elements create something new and different. This creates a transparent focus on the experimental idea while still creating idiomatic music. Ultimately I think this approach has more in common with the idiomatically yet creative experimentation of bands like the Beatles, Led Zeppelin, Rush, and Tool, then with the intellectually-fueled novelty-centered approach of much contemporary art music. Thus I still feel that my music is essentially "traditional."

This thesis consists of three experiments: an experiment to see if 5/4 rhythms can be used like 3/2 rhythms in rock/reggae; an experiment to see if a rock/blues groove can exist in a "tempo spiral"; and finally an experiment to see if an electric guitar can be integrated into a gamelan ensemble.

Another significant aspect of my aesthetic, again influenced by popular music, is my preference for recorded music over live music. Though recording technology originated as a way of "capturing" live performances, recorded music has long since become the primary source of musical experiences in our society; I suspect that most people in our society, like myself, listen to 10–20 hours of recorded music for every one hour of live music they hear. Thus for me it seems only natural, and even obvious, that the studio-recording is the primary musical object. Of course, live performance remains a special event with social, aural, and spacial elements that cannot be reproduced in a recording but these elements are not essential for me. I prefer the recorded medium's focus on "the music itself" which I see as a logical extension of any focus on composition as opposed to performance. The Beatles' decision in 1966 to quit touring and only produce studio albums (preceded by Glen Gould in 1965) is a particular inspiration to me. By setting aside the constraints, stresses, and endless logistical hardships of live performance I am freed to focus on realizing my musical vision.

If the recording is the primary end-product then the recording studio is an essential part of the compositional process. As a composer with the skills of a producer and engineer I can use the studio to achieve as exact a musical rendition of my work as I desire: precisely selecting and controlling rhythms, timbres, dynamics etc. The final result is an ideal musical rendering of my piece that is more detailed than any score can be and more precise and perfect than any live performance. Thus

the score is no longer the ultimate authority; the studio recording is the real score, a model, “official” version of the piece that can then be reinterpreted as desired in live performance. This aesthetic explains to some extent why my scores lack certain details, particularly dynamics and articulations, as I can oversee these details with greater precision during the recording process.

It should be obvious now that I consider the main part of this thesis not to be the attached scores but the included studio recordings of the three pieces. These recordings were assembled in May and June of 2012, recorded in the UCSC Recording Studio (thanks to Bill Coulter), the UCSC Electronic Music Studio (thanks to Peter Elsea), and at my home studio where they were mixed and edited. I also include a recording of the live performance of the pieces at my Master's Recital, which took place on April 14th 2012 in the UCSC recital hall and a second performance of *Faux-Java Blues* which took place in the same hall on May 19th 2012.

Temper Temper Time

for Alto Saxophone, two Trumpets, Trombone, Drum Kit, Electric Bass, Keyboard, and Electric Guitar.

Temper Temper Time realizes several experimental rhythmic "expansions" of rock, reggae, and ska idioms. Whereas rhythm in reggae and rock is based on rhythmic relationships of 1/1, 2/1, 3/1 and 3/2, *Temper Time* explores rhythmic relationships of 5/1, 5/2 and 5/4, realizing 5-based rhythms analogous to the 3- and 2-based rhythms found in rock and reggae. I explore several different uses of these 5-based rhythms. Rock and reggae, like many other traditions, feature frequent syncopations that suggest or substantiate 3/2 cross-rhythms: *Temper Time* makes abundant use of 5/4 cross-rhythms. Many rock bands, notably Led Zeppelin, have also explored a technique known as "tempo modulation" wherein the subordinate pulse of a cross-rhythm is reinterpreted as the main pulse, thus causing a reorientation to a new tempo at that cross-rhythm: *Temper Time* is structured around 5/4 tempo-modulations.[1] [2] Finally *Temper Temper Time* explores the 5/1 relationship, dividing

1 "The Ocean" (Led Zeppelin *Houses of the Holy* 1973); "Achilles Last Stand" (Led Zeppelin *Presence* 1976).

2 Fernando Benadon, "Towards a Theory of Tempo Modulation," *Proceedings of the 8th International Conference on Music Perception and Cognition,* Northwestern University School of Music, Evanston, Illinois (2004).

beats into “quintuplets.”

“Tempered” 5/4 Tempo Relationships

The central idea of *Temper Time* is found in the 5/4 tempo relations that structure the piece. By modulating to a tempo 4/5 slower three times one arrives at a tempo which is very close to half the original: 64/125 instead of 64/128. This small divergence of 125/128 (known in tuning theory as the “lesser diesis”) is not really noticeable and live performance by human performers cannot be precise enough for it to matter in any case. However, conceptually, and in the recording studio, we can be precise enough for this diesis to be a issue. Following a practice from tuning theory I simply “temper” each modulation slightly by adding one third of the diesis to each modulation. Thus the third modulation does arrive at exactly half the original tempo, which can easily be modulated back to the original tempo (double-time, the most common tempo modulation). When presented linearly (as a tempo change not a cross-rhythm) this tempered 5/4 ratio is to my ear indistinguishable from the “pure” 5/4 (unlike in tuning, where we can easily hear it) so the central concept of the piece remains sound. *Temper Time* is thus based on three tempo areas (Figure 1) each separated by a tempered 5/4 ratio. These tempo areas are matched to keys separated by the tempered 5/4 major thirds of equal temperament: F, Db, and A. This Cowellian analogy between rhythmic ratios and pitch ratios is of course perceptually irrelevant

but still fascinating.[3] The matching of key/chord and tempo is spelled out quite obviously in measures 43–50, where A and Db chords appear as 5/4 syncopations both harmonically and rhythmically. The F chord in measure 110 suggests the same idea.

5/1: Quintuplet Subdivisions

Musicians have little trouble dividing beats into smaller pulses at the ratios of 2/1 or 3/1 but when we deal with larger odd numbers we tend to approach them additively rather than divisively: for instance by alternating groups of two and three to add up to five. Simply dividing a beat into fives or sevens seems to not come naturally and is rare, verging on absent, in musical traditions around the world. Part of what I do in *Temper Time* is simply create basic rock beats and rhythms which are based in divisions of five. This creates a challenge for players: we have a tendency to subtract or add a pulse to make even fours or sixes and it is very difficult to feel the right placement of syncopations in divisions of five. Since my goal was to achieve a feel of fives equivalent to our normal feel of twos and threes I notated everything in 4/4 but with quintuplet markers. Too late I realized that my performers would have been more comfortable reading and counting "normal" eighth notes in 5/8 or 10/8 as this would conform better with our normal additive way of thinking about odd time. This issue is equivalent to the use of the 6/8 time signature as "compound duple"

3 Henry Cowell, *New Musical Resources,* New York (1992): Something Else Press.

instead of writing 2/4 with triplets—see Figure 2.

5/4 Cross Rhythms and Tempo Modulations

The opening idea of *Temper Time* (measures 1–9) consists of a series of tempo modulations: starting at F/160 the tempo and steps down through each tempo/key area until it reaches F/80, which is equivilent to the original F/160, at measure 9. Each of these steps is achieved by syncopated hits on the "and of 2," "a of e," and 1. These hits are each separated by five sixteenth notes making a 4/5 cross rhythm equivalent to quarter notes at the tempo 4/5 below the current tempo, and thus sets up the modulation to this new slower tempo. The effect of this section is like stepping, or falling, down an uneven staircase. This staircase motive, which is mirrored in the piece's overall form, is used repeatedly in the exposition and reappears at several locations later in the piece: measures 123, 166 and 227.

Another way I achieve tempo-modulations in *Temper Time* is by maintaining a steady pulse on the hi-hat which is alternately interpreted as subdivisions of four or five (as sixteenths or quintuplet-sixteenths). This occurs throughout sections H, P, R, and S. In section H a 5/4 cross rhythm pattern starting at measure 77 becomes the regular 5/1 division of the slower tempo 63.5bpm at measure 84 (Figure 3). In sections P and R a similar five-division high-hat pattern is maintained even as in measure 141 and 155 two beats of four division are interspersed, causing the hi-hat pattern to shift its position in the beat (Figure 4); the keyboard, hi-hat, bass, and

guitar rhythms do the same thing. Notice that the keyboard's staccato chords continue in the exact same absolute pulse even as the tempo changes around them. In order to shift the hi-hat pattern back to its original location three more four-division beats are needed (2 + 3 = 5) (measure 147).

The only real appearance of 5/2 in this piece is in the guitar part of measures 84–86 and 92–94. The classic reggae off-beat "skank" guitar part continues evenly even as the tempo steps down, creating a 5/2 between the guitar and the kick/snare half notes. This complication of the reggae guitar rhythm is one of my favorite examples of an "expansion" of idiomatic pop music features.

Form

Temper Time has three principal sections, each corresponding to one of the keys/tempos, plus a recapitulation of the opening material at the end. The overall structure drops in tempo/key each section—mirroring the "staircase" motive—finally reaching all the way down to 40 bpm which is equivalent to the original tempo 160bpm (Figure 5). Sections A and B are idiomatically more in common, together creating an expository ark and giving the piece the feel of a larger two-part form: AB vs C. Most of the piece deals with steps back and forth from one key/tempo to another, but the final climax of the piece (section V) pits all three tempos/keys against each other. The 5/4 between A and Db is set up at measure 170 (keyboard playing Db, guitar playing A) but then the material from measures 103–110, transposed to the key

and tempo of F, is added against it (in the brass). This F key/tempo material slowly takes over and sets up the recap (section W). The relationship between any two of the tempos present in this section is 5/4 but a 25/16 relationship is created by the concatenation of two 5/4s (5/4*5/4 = 25/16).

Melodic/Harmonic Material

The different sections of *Temper Temper Time* were assembled out of material that was originally conceived separately, but I attempted to give the three sections greater unity by using several motives throughout. A bluesy chromatic motive appears at a number of crucial points in radically different contexts (measures 77, 118–121, and throughout sections N–R) and is actually first played surreptitiously as part of the bass riff at measure 11. The main trumpet melody introduced at measure 18 reappears at measure 95 in the same key though the accompaniment has now moved to the Db tempo area. This melody appears again at 156.

I frequently reinterpret a triad as the 3rd, 5th and 7th scale degrees of a seventh chord with its root a major third below as a way of moving between keys that parallels the tempo-modulations. Another important motive in *Temper Time* grows out of this process. This motive is a three-note chord consisting of a root, a diminished 5th and a minor 7th (Figure 6). This motive appears in the exposition section harmonically as the top three pitches of a dominant 9th chord (particularly in section F) and I use it

to move from F to Db in measures 89–92. The bridge A/50.4 section is saturated with melodic and harmonic instances of this motive.

Temper Temper Time Figures:

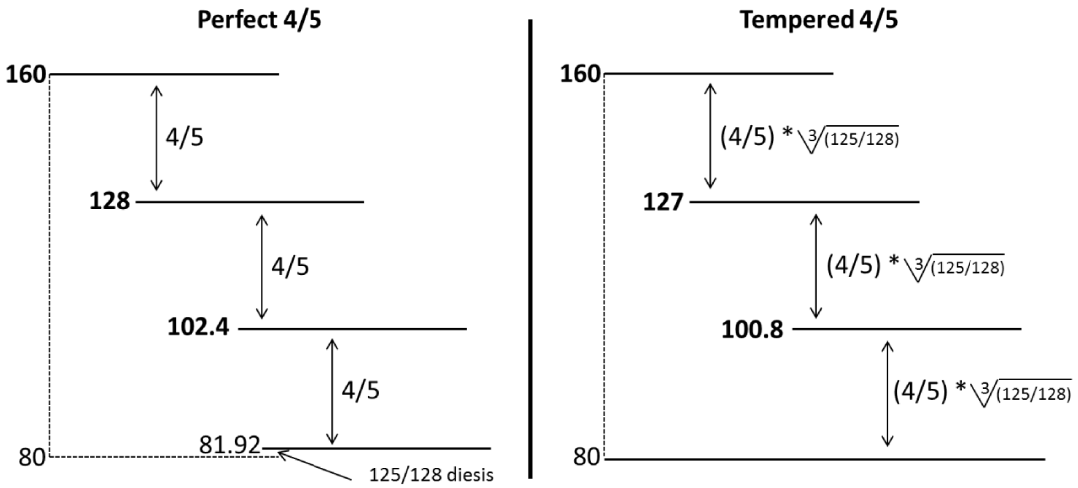

Figure 1: 5/4 Tempo relationships in *Temper Temper Time*

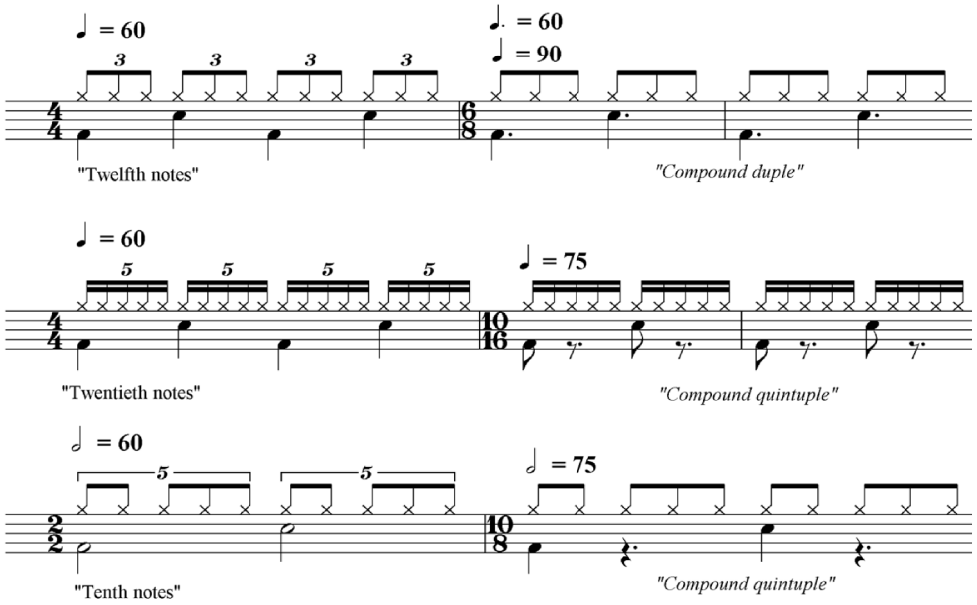

Figure 2: Notating 5/1 divisions; quintuplets vs compound quintuple.

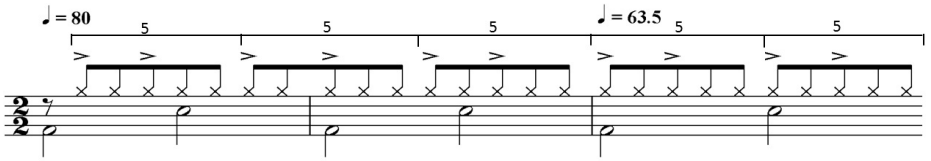

Figure 3: 5/4 Cross-rhythm becomes 5/1 subdivision

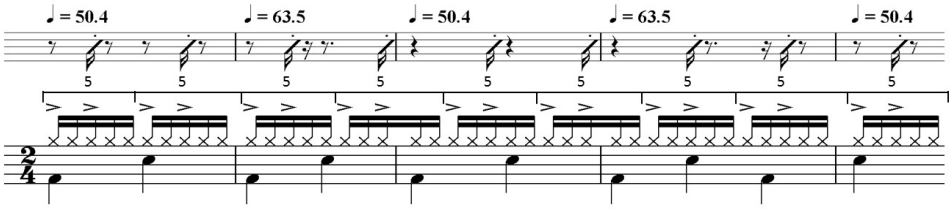

Figure 4: Shifting hi-hat pattern

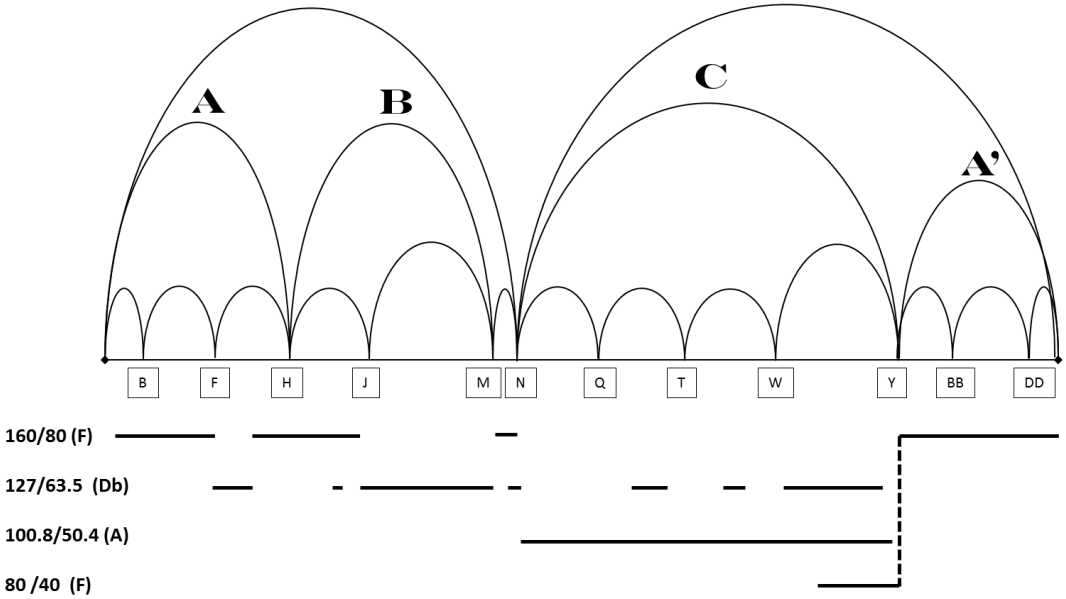

Figure 5: Formal diagram of *Temper Temper Time*

Bluesy motive

Half-diminished motive

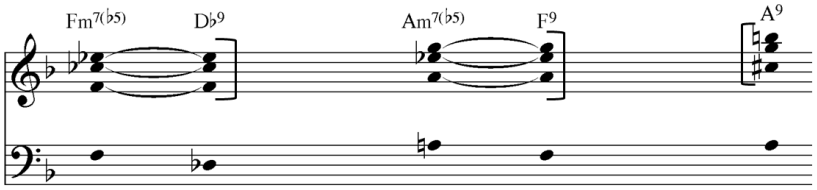

Figure 6: Motives in *Temper Temper Time*

Shepard

for Clarinet, Alto Saxophone, two Trumpets, Trombone, Drum Kit, Electric Bass, Keyboard, and Electric Guitar.

For the last several years I have been fascinated by “tempo spirals,” a concept invented by Elliott Carter for variations four and six of his piece *Variations for Orchestra*.[4] The concept is very similar to a concept in Central Javanese music, involving players switching between different temple levels, or *irama,* by accelerating or decelerating.[5] In a tempo spiral the tempo accelerates or decelerates continuously but tempo modulations are periodically used to step back to the original tempo. The effect is of a continuous acceleration/deceleration which never gets too fast/slow (Figure 7). The analogy with the “Shepard tone” effect is the origin of this pieces' title—another analogy of pitch and rhythm.[6]

the Tempo Spiral

Though I am fascinated by Carter's idea I am dissatisfied with his execution of it. I feel that the dense orchestral textures in his variations don't create a strong sense

4 Elliott Carter, *Variations for Orchestra* 1954, New York, NY : Associated Music Publishers ; Milwaukee, WI : Distributed by H. Leonard, 1993ed.
5 Henry Spiller, *Gamelan: the traditional sounds of Indonesia,* ABC-Clio: 2004.
6 Roger N. Shepard, "Circularity in Judgements of Relative Pitch," *Journal of the Acoustical Society of America* 36/12 (December 1964): 2346–5.

of pulse so the tempo spiral is obscure. In contrast, much of my work in the last few years has involved creating tempo spirals in idiomatically rock styles. The highly rhythmic, percussive, and groove-oriented idioms of rock make the tempo spiral extremely transparent, creating a contradiction (almost an oxymoron): an unsteady groove. I've explored many different permutations of tempo spirals: different rates of acceleration, different metric modulation reorientations, different textures etc. In particular the idea of a tempo-spiral canon is intriguing and I've written several pieces based on this idea. However, for practical performance reasons, in *Shepard* I limited myself to one simple tempo-spiral idea.

The spiral in *Shepard* accelerates continuously throughout, doubling every four measures before reorienting via the simplest tempo modulation, 2/1, back to the original tempo. This pace of acceleration is actually one of the fastest I've explored so the feeling of acceleration is obvious throughout the piece. As noted in the score the acceleration doesn't exactly double every four measures. By either slightly less or slightly more than doubling the tempo every four measures the overall tempo can increase or decrease (because the 2/1 switch to half-time reset is always the same), as represented by the tempo designation at the start of each four-measure group. This creates an interesting sense of "meta-tempo." In the score the piece begins its spiral at 80 bpm but slows to 56 bpm by measure 49 and then stays relatively stable for the rest of the piece. In live performance this kind of precision is impossible, so performers can increase or decrease the meta-tempo of the piece as needed. In

particular it can help the drummer to “slow down” (actually to speed up less) at certain points.

Rhythmic Material

Within the spiral framework I endeavored to create a real groove. In order to do this I had to find ways of obscuring the metric-modulation “reset” point. Figure 8 shows what I think of as the “main groove” of the piece even though it doesn't appear until measure 117. The last two notes, a half note and whole note, follow well with what comes before them but are also reinterpratable as a quarter note and a half note when the tempo resets at the beginning of the next phrase. In contrast, the riff/beat structure in section D makes each reset point extremely obvious, creating an “pulling-back” effect each time it happens.

Another prominent idea throughout the piece involves melodic fragments on up beats which become the eighth-note off beats when they cross the reset barline (Figure 9). I frequently use this type of structure to obscure the tempo-reset points (many examples in sections E and F). When I create canonic entries of melodies in sections H, J, and L the onsets of these up/off-beat rhythms never coincide (Figure 10), creating a simple tiling canon.

Harmonic Material

The harmony of *Shepard* revolves around progressions containing major

triads separated by minor thirds. Several common rock progressions contain this root motion and I use two main progressions throughout, the first being the so-called "lydian-plagal cadence" II–IV–I, used most famously as part of the cadence of "Yesterday" by the Beatles.[7] The second progression, IV–bVI–I, is substitution for the common IV–iv–I progression, as can be heard in the chorus of the Beatles' "I Saw Here Standing There."[8] Figure 11 shows the voice-leading possibilities of these two progressions with all the chords made into dominant 7ths. These progressions are used throughout the piece, both in E and transposed to other keys. Since both my progressions contain the root movement of a minor third they can be used to modulate to keys a minor-third distant by reinterpreting II–IV as IV–VI, or vice versa (Figure 12). At several points I use a combined and expanded version of these two progressions to harmonize a chromatic bass ascent from 1–5 (measures 109–112 and section Q; Figure 13).

I also use several other rock progressions that involve major chords separated by a minor third: the typical rock move directly from I–bIII (measure 155–157) and the move from V–bVII (measures 160 and 164). I make use of a cliché blues/rock move that traverses a minor third simply by bashing out parallel chromatic major triads, as can be heard in the Beatles' "Mean Mr. Mustard": B-C-C#-D, D-C#-C-B.[9] This phrase is usually used between V–bVII (as in "Mean Mr. Mustard") but I also use it in other places. I also copy a Beatles modulation: in the song "You're Gonna

7 (The Beatles *Help!* 1965).
8 (The Beatles *Please Please Me* 1963).
9 (The Beatles *Abbey Road* 1969)

Lose That Girl" Lennon modulates from the key of bIII back to the home key by reinterpreting the rock bVII chord in G as the Neapolitan bII of E (measures 164–165).[10]

Melodic Material

The main melodic idea that saturates *Shepard* is essentially an octatonic scale grown out of the "bluesy" chromatic neighbors of each note of a dominant seventh chord: #2–3, #4–5, 6–b7. The odd man out of course, from the blues perspective, is the step from 1–b2 which I harmonize as a different scale degree in dominant seventh chords a minor third above or below the root key (Figure 14). This combines with the already mentioned harmonic reinterpratability of the two main progressions to allow the piece to shift between three different keys C#, E, and G. In the introduction the two main progressions are used to harmonize each bluesy neighbor note one at a time, #2–3, #4–5, 6–b7 until finally 1–b2 arrives at measure 25 (Figure 15). I think of the out-of-place appearance of 1–b2, which suggests one of the other keys (C# or G), as the narrative complication of the piece—its presence continually questioning the stability of the main key E major.

Beyond this half-step motive, *Shepard* has two important melodic themes: the first, based around a chromatic descent, is set in motion at each appearance by an overlap with a phrase ending with a half-step ascent (first heard in section E). This

10 (The Beatles *Help!* 1965).

chromatic-descent melody is the basis of the two big structural cadences at sections G and W. However, I think of the second melodic idea, which appears in section H and continues in numerous canonic permutations throughout the piece, as the piece's main melody. This main melody is saturated with the bluesy half-step motive.

Form

The form of *Shepard* was the least preconceived of my three pieces. I decided not make a large-scale modulation scheme shape the piece, but to stay in E throughout, as would be typical for rock music—the moves to G, C#, and A are all rather fleeting. As a result *Shepard* is rather meandering and directionless, which complements the tempo spiral: always going somewhere but never seeming to get there. Still the piece does have a formal shape. *Shepard* has two large sections, delineated by the matching cadences at sections G and W but with major subsections within giving it more of an A-B-C type shape (Figure 16). I think of the of the first 96 measures as an extended introduction with the main ideas of the piece being the already discussed groove and canonic melody which are introduced in sections H and J respectively.

Shepard Figures:

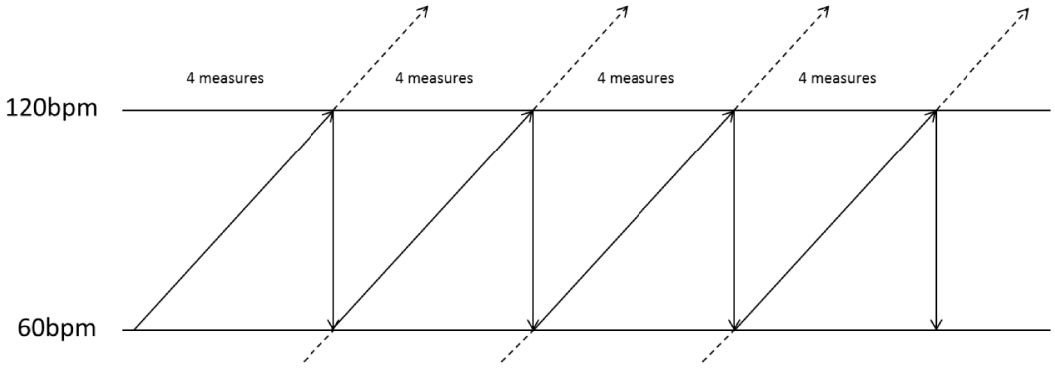

Figure 7: Visualization of tempo spiral

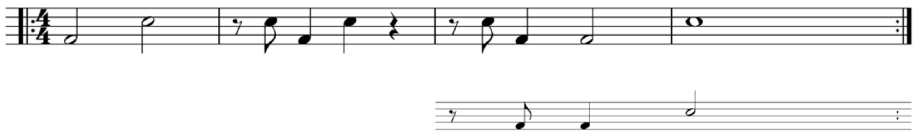

Figure 8: *Shepard's* main groove

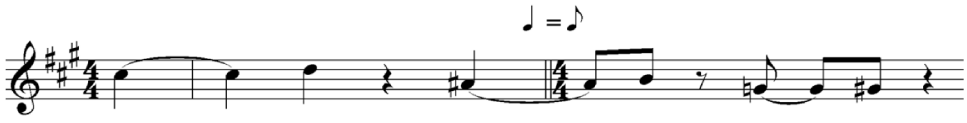

Figure 9: Up-beat/off-beat rhythms

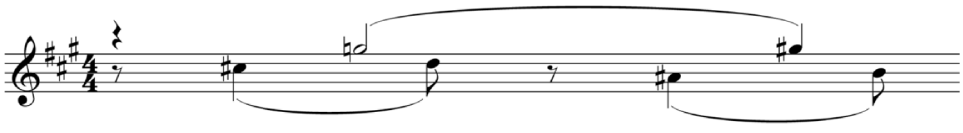

Figure 10: Tiling onsets

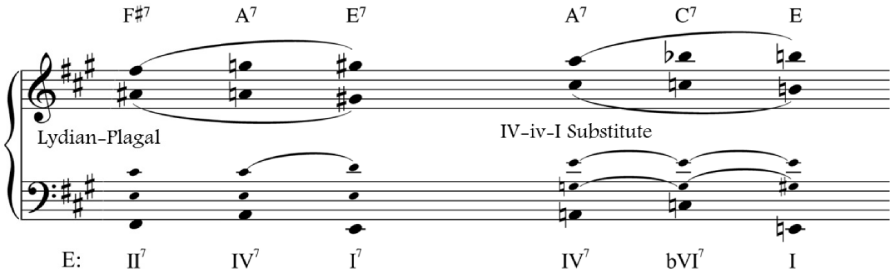

Figure 11: *Shepard's* main progressions

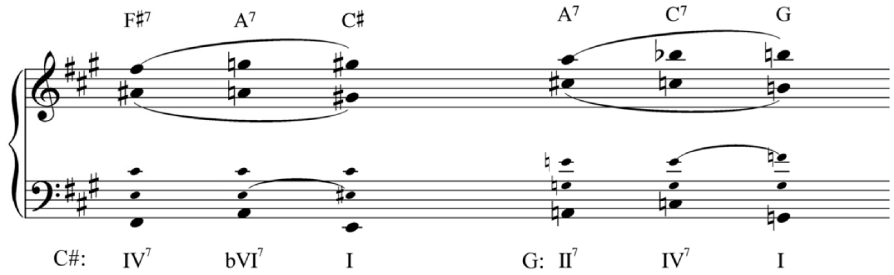

Figure 12: Reinterpreted for modulation

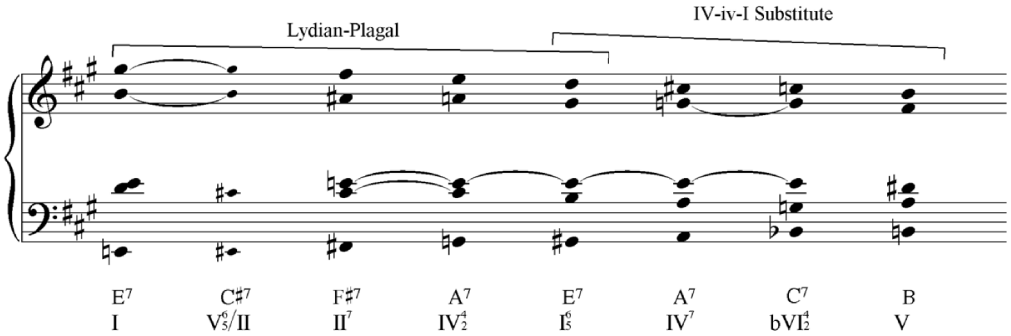

Figure 13: Main progressions combined and chromaticized

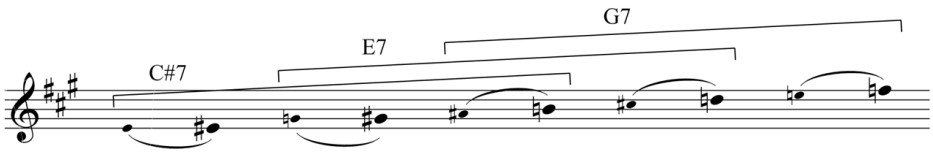

Figure 14: *Shepard's* main motive:
The octatonic scale as bluesy chromatic neighbors
of three different dominant 7th chords

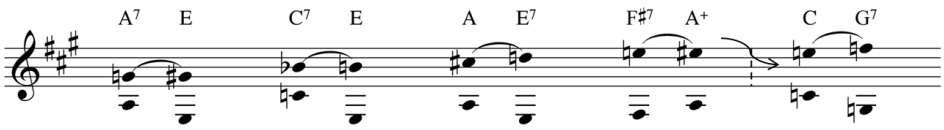

Figure 15: The main progressions harmonizing each bluesy neighbor

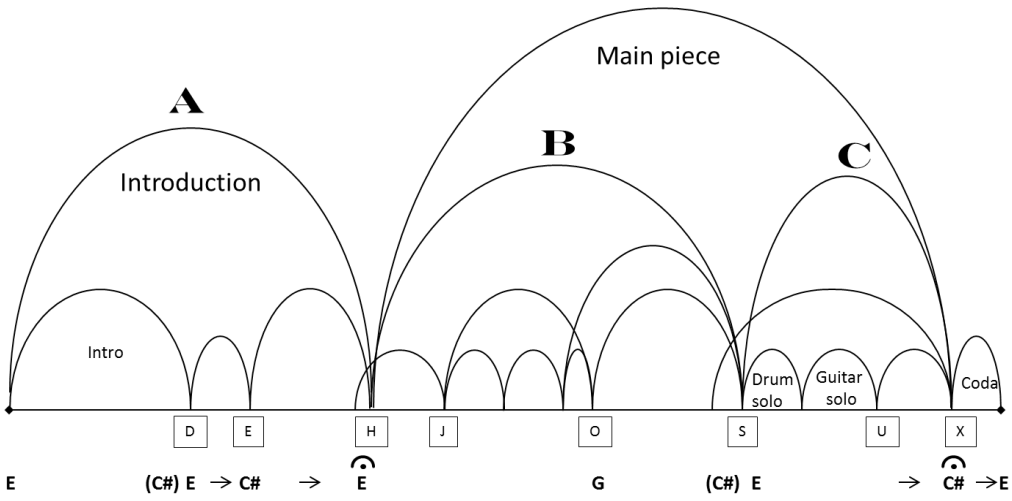

Figure 16: Formal diagram of *Shepard*

Faux-Java Blues

a Concerto for Gamelan and Guitar

Instrumentation

This piece was written for the UCSC Javanese gamelan ensemble and an electric guitar. Since every gamelan is built with its own idiosyncratic tuning the piece will not sound the same if performed by another ensemble. In order to account for the non-Western tuning of the gamelan the electric guitar used must be fretless. The following instruments of the gamelan are used: rincik, bonang, slenthem, gambang, kenong, panerus, saron I, saron II, peking, kethuk and the “big gongs” known as gong pul and gong ageng.

History

As an undergraduate I played in the UCSC Javanese Gamelan ensemble, where I developed a fondness for the music and rudimentary understanding of its workings. In the spring of 2010 I played electric guitar for the premiere performance of a work by Bill Alves entitled “Angin Listrik,” a piece written for the UCSC Balinese Gamelan Semar Pegulingan (Professor Linda Burman-Hall) and two electric guitars. However, I was unimpressed by Alves' piece for although he had us tune our open strings to the pitches of the gamelan our fretted guitars were unable to play any

other pitches in the proper scale. Thus for my own gamelan and guitar piece I purchased a fretless electric guitar that would allow me to play melodically in tune with the gamelan. The “Faux-” in the piece's title is a tongue-in-cheek acknowledgment of how very unauthentic this piece is as Indonesian music—it really is more of a bluesy rock song using Indonesian instruments. Since my intent was never to write an authentic Indonesian piece I don't consider this problematic but I acknowledge that many in the academic community might.[11]

Sampling

In the fall of 2010 I recorded samples of all the notes of all the instruments in the UCSC Javanese gamelan.[12] I was thus able to a create MIDI-controllable software synth gamelan. By interfacing these instruments with my notation software I was able to compose for the gamelan with live playback of the instruments and to practice playing my fretless guitar in tune with the other instruments.

Notation

Central Javanese gamelans typically consist of two sets of instruments, each tuned to a different scale: the five-note *Slendro* and seven-note *Pelog*. For this piece I used the pelog scale because I liked the a greater variety of melodic and harmonic colors it affords. In traditional Indonesian music only five of the seven pelog pitches

11 Henry Spiller, “Lou Harrison's Music for Western Instruments and Gamelan: Even More Western than it Sounds,” *Asian Music* 40/1 (Winter/Spring 2009): 31-52.

12 Thanks to James Pollack and Peter Elsea for their logistical assistance.

are typically used in a given piece but in *Faux-Java Blues* I use all seven pitches. In the Sundanese style taught at UCSC (despite the fact that our Javanese gamelan is of west Javanese make) descending numbers map to ascending pitches and the seven pitches are only identified by five numbers: two pitches are labeled 3 and two are labeled 5.[13] Depending on what mode of pelog is desired either one or the other of the 3s or 5s are played and they are differentiated by calling them 3 and 3+, and 5 and 5- respectively.[14] Since my performers had no experience referring to the pelog pitches by letter names I gave out parts written in a hybrid of staff and cipher notation, with the cipher numbers representing pitches but with western rhythmic notation, bar-lines, and rehearsal marks. As part of this thesis I submit both a Cipher-notation-hybrid score and a fully Western score of this piece.

Tuning

To allow composition using Sibelius I had to assign the pitches of pelog letter names. The gamelan's tuning does not reference A440 so simply assigning each pitch to the closest letter name of A440 equal temperament would not necessarily be the best choice: it is the relationships of the pitches to each other that is important not their relationship to arbitrary A440. Depending on which pitch of the scale is taken as the reference point the pitches in our pelog can imply different letter names. The approximate intervals, in cents, between the pitches of the scale are shown in Figure

13 Simon Cook, 1992, "Guide to Sundanese music," Bandung: 6. http://digitalmusics.dartmouth.edu/~gamelan/library/sunda.pdf
14 Ibid.

17 (the tuning of the various instruments varies by as much as 30 cents so these numbers only represent rough averages). Since pitch #1, which is close to a Bb, is the pitch most closely shared between the pelog and slendro instruments (the ~Ebs are also very close) I made that my reference pitch when assigning letter names in my notation software. With this approximate Bb as my reference pitch the other six pitches fall closest (in terms of equal-tempered half steps) to Cb, D, Eb, F, G and A, as shown in Figure 17. Several of the pitches, especially the "Cb" and "F" are extremely far from equal-temperament intervals (also notice the stretched octave). *Faux-Java Blues* actually uses pitches #3 and #4 (approximately F and Eb) as tonal centers—Figures 18 and 19 show what the closest letter names would be from these two reference points. In relation to Eb a number of very western intervals result (including an tonic major triad) which made it very easy for me to slip into this "key" and is why I ultimately ended up using it as the closing point of the piece. In fact I found myself disappointed by how very western the Eb tonal center sounds so I wrote most of the piece with #3 (F) as the tonal center. The F-referenced intervals are decidedly non-western with several highly ambiguous intervals. Some of these my ears were nonetheless able to assimilate for their "bluesy" quality, particularly the extremely flat minor third to Ab and the extremely flat tritone to B. In my final score I used Bb, C, D, Eb, F, G, A as my notes because their conformity to western convention made notation easier. However, the "C" is extremely flat—sounding more like Cb in relation to the Eb "tonality"—and the interval between F and G is closer to

a minor third than a major second.

Melodic/Harmonic Material

Several motivic ideas recur throughout *Faux-Java Blues* (Figure 20). The most obvious is the use of intervals approximating a minor 7th, particularly as a downward leap but also ascending and used harmonically. The descending leap from G–A and the frequent use of the Eb–F interval are the most obvious occurrences of this motif. The triplet on G (usually played by the Peking) is another important motive, appearing as a kind of interrupting commentary from time to time (measures 6, 96, 176, 187 and 280). There are two main melodic themes, one centered around Eb (appearing notably at measures 8, and 152 and 222) and the other around F (sections B, J, O, and W). Note that the opening chord which fills in the minor 7th with a diminished fifth A-Eb-G then adds a F underneath to make a F9 chord is similar to ideas in *Temper Temper Time* (ignoring the different tunings of course).

Rhythmic Material

Faux-Java Blues contains syncopated rhythms typical of both rock and Javanese music, with some syncopations briefly implying 3/2 cross rhythms, particularly at measures 101–102 and 117–118. The most interesting rhythmic device is a semi-traditional Javanese *irama* switch, very similar to, and part of the inspiration for, the tempo spiral of *Shepard*: the tempo in letter M slows to a crawl but then the

guitar enters at N filling in this empty rhythmic space and implying the double-time tempo which then takes over (switching to a higher irama).

Form

The piece has a three main sections, each consisting of a predominantly solo section and a tutti section (Figure 21). The narrative impetus of the piece comes from the conflict between two tonal areas: the dissonant Adim7 and F9 chords introduced at the beginning and the melodic material centered around F, especially the F-centered theme, conflict with and are eventually overcome by the peaceful Eb tonality and its main theme.

Faux-Java Blues Figures:

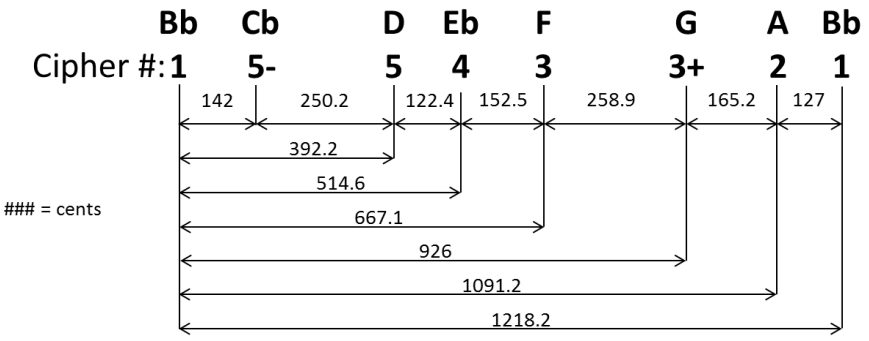

Figure 17: Size of intervals of pelog scale
& note names of scale with #1 (Bb) as root

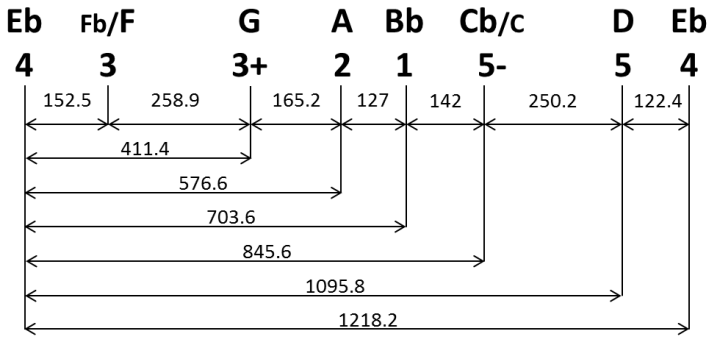

Figure 18: Note names of pelog with #4 (Eb) as root

= cents

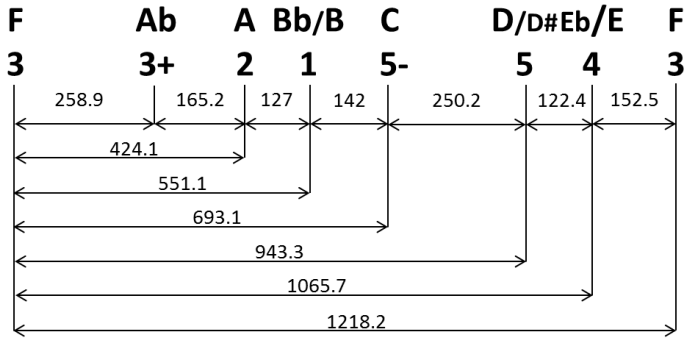

Figure 19: Note names of pelog with #3 (F) as root

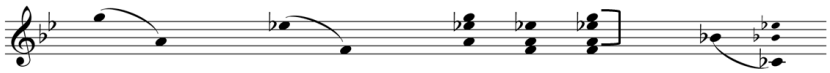

Figure 20: Main motive and chords of *Faux-Java Blues*

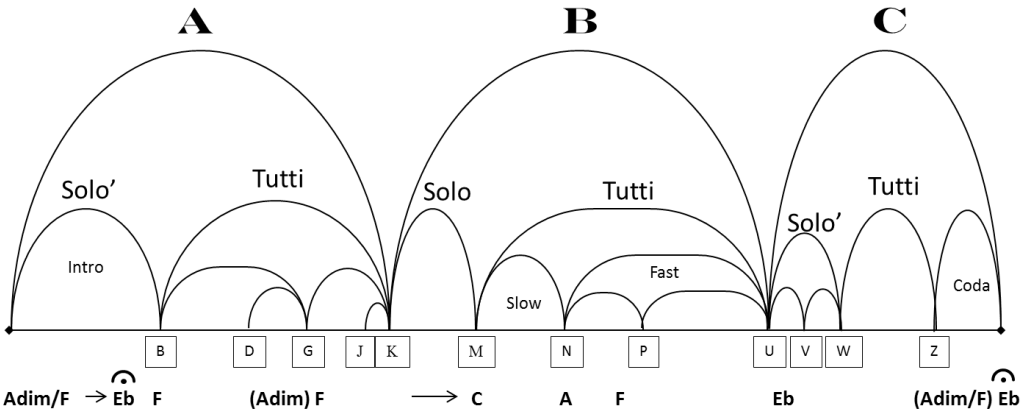

Figure 21: Formal diagram of *Faux-Java Blues*

List of Supplemental Files

Scores:

TemperTemperTime_score.pdf

Shepard_score.pdf

Faux-JavaBlues_score.pdf

Audio Files:

Studio-Recordings:

TemperTemperTime_studiorecording.mp3

Faux-JavaBlues_studiorecording.mp3

Shepard_studiorecording.mp3

April 14th 2012 Masters Recital Performance:

TemperTemperTime_mastersrecital.mp3

Shepard_mastersrecital.mp3

Faux-JavaBlues_mastersrecital.mp3

May 19th 2012 Gamelan Concert

Faux-JavaBlues_may19.mp3

Notes on the audio recordings:

The players in the live performances were as follows: *Temper Temper Time*: Max Nied (drums); Ray Fernando (keyboard); Kai Kopecky (bass); John Bissett (trombone); Jennifer Beaver (trumpet); Nikki Mokover (alto sax); myself

(guitar). *Shepard:* the same as *Temper* with the addition of Vincent Zayek (clarinet) and William Long (conductor). *Faux-Java Blues*: Kellie Bryant (drums); Jen Lependorf (bonang); Elena Pagter (rincik); Lucas Turner (panerus); Brandon Yu (saron 1); Jessica Loranger (saron 2); Mike Knorr (peking); James Thomas (gambang); George Narlesky (slenthem); Simon Northall (kenong); Patrick Ferraro (gongs/kethuk); myself (fretless guitar).

For the studio recordings all the same players were used except: for *Shepard* and *Temper* Jen Beaver also recorded the trumpet 2 part which was absent at the live performance and I performed the keyboard parts. For *Faux-Java Blues* I performed all the parts except for the drums (Kellie Bryant), Bonang (Jen Lependorf), and Rincik (Elena Pagter).

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