



NATHANIEL BARTLETT // SOUND-SPACE AUDIO LAB

2017 EVENTS PROSPECTUS

# INTRODUCTION

In this prospectus, you will find a concise overview of my work. For more information, audio, and links (Facebook, Instagram, etc.), please visit [nathanielbartlett.com](http://nathanielbartlett.com). Included at the end of this document are three articles about my work from *Percussive Notes*, a publication of the the Percussive Arts Society.

I can present any of the event categories (or variations) listed below.

**Please note that I tour with 100% of my own equipment.**



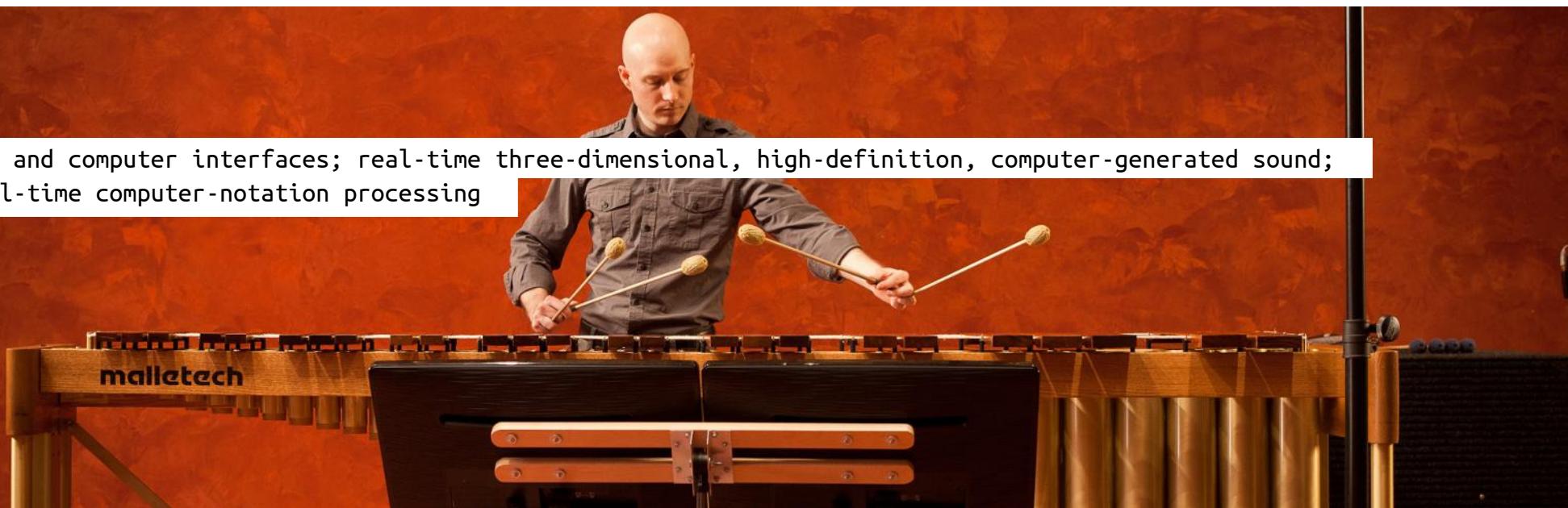
- [1] LIVE MARIMBA+ELECTRONICS PERFORMANCE
- [2] MULTI-CHANNEL (SURROUND) FIXED MEDIA ELECTROACOUSTIC WORKS CONCERT PRESENTATION
- [3] MULTI-CHANNEL LISTENING SESSION
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## LIVE MARIMBA+ELECTRONICS PERFORMANCE

My marimba+electronics performances seamlessly meld my five-octave acoustic marimba with a powerful Linux-based computer, self-designed computer control interfaces (such as my 3D-camera-based mallet/body tracking system), a variety of hardware audio electronics, and eight loudspeakers (plus subwoofer) arranged in a cube. With the audience positioned in the center of the loudspeaker cube, an elaborate, kinetic, three-dimensional sound environment can be projected into the audience space, totally immersing the listeners in the music. In my immersive sound environments, spatialization (the positioning and movement of sounds in physical space) becomes a central musical parameter, along side of pitch, rhythm/time, timbre, and so on.

The sound environments of my compositions are comprised of sounds culled from many sources and techniques, including digital audio manipulations of my live marimba, digital audio manipulations of recorded acoustic sounds stored on my computer, and synthetically engineered sounds. The intricate three-dimensional sound environments of my works are further enriched by the use of high-definition audio (24 bit/88.2 kHz, superior to CD-quality), which allows for a significant increase in sonic nuances.

marimba and computer interfaces; real-time three-dimensional, high-definition, computer-generated sound; and real-time computer-notation processing



In my performance rig, two computer monitors are used in place of a conventional music stand. The music notation, now free from the physical realm of paper and ink, is created and manipulated in real time, just as the computer-generated sounds are created and manipulated in real time. The compositions are not fixed, but rather constantly evolve as I create new musical material and new computer processes. In live performance, I act as creator and live arbiter of the music, navigating through flexible compositional frameworks which utilize a complex system of interconnecting notation generation, acoustic instrumental performance, and real-time audio manipulation.

# MULTI-CHANNEL (SURROUND) FIXED MEDIA ELECTROACOUSTIC WORKS CONCERT PRESENTATION

In addition to my live performances, I also have an ongoing endeavor called **The Sound-Space Audio Lab Fixed Media Repertoire Project**. The (mostly) multi-channel repertoire in this project includes my original works as well as works by other composers. The works are presented on **The Sound-Space Audio Lab Mobile Multi-Channel Electroacoustic Diffusion System** in a variety of loudspeaker configurations, depending on the requirements of the work.

COMPLETE REPERTOIRE LIST --> [nathanielbartlett.com/fmrp](http://nathanielbartlett.com/fmrp)

## WORKS INCLUDE

**trichotomic ecology** (2011) • for marimba, percussion, and viola; real-time three-dimensional, high-definition, computer-generated sound; and real-time computer notation processing • eight-channel (cube) loudspeaker array • fixed media • duration: 42:54 • composed by **Nathaniel Bartlett** • marimba and computer control: Nathaniel Bartlett • percussion: Geoff Brady • viola: Nils Bultmann

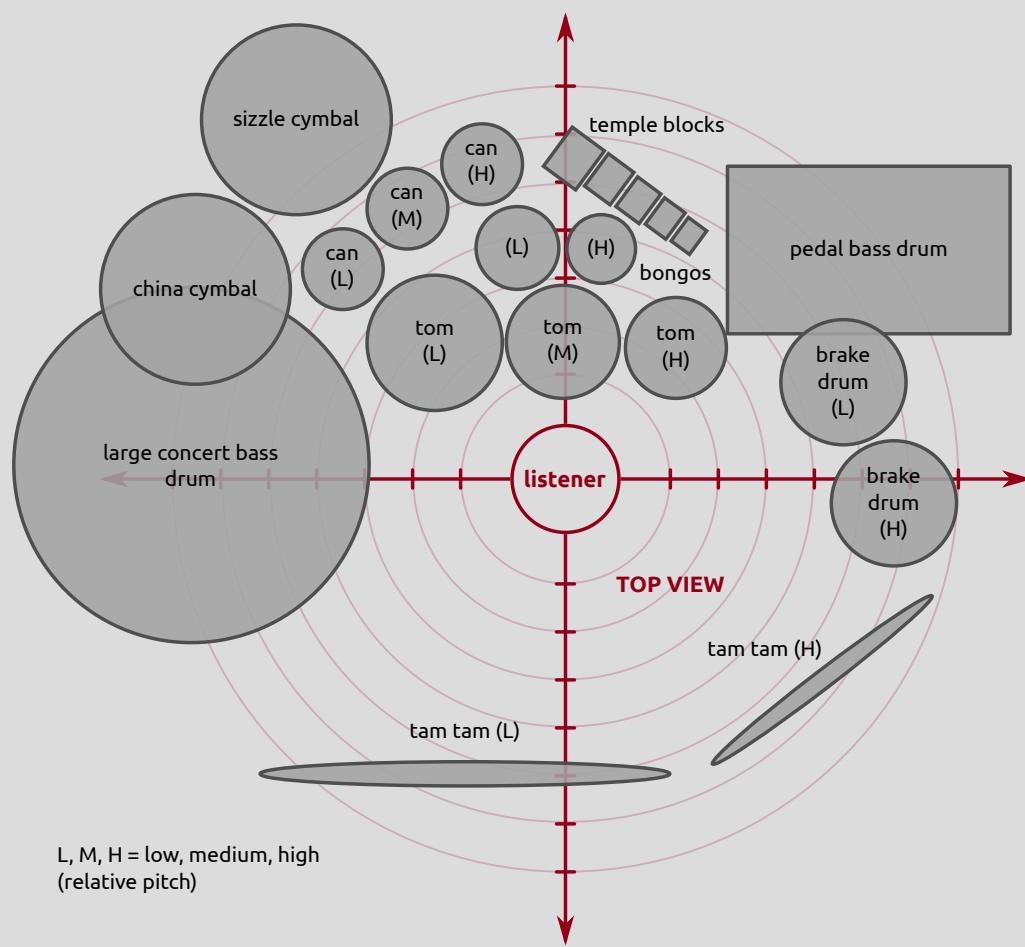
**Sidewinder** (1971) • In two movements, Side One: 14:36, Side Two: 14:17 • for four-channel tape, created on Buchla analog synthesizer • four-channel (square) loudspeaker array • fixed media • high-definition digital transfer from original analog tape • composer: **Morton Subotnick**

**KONTAKTE** (1958-1960) • for four-channel tape • four-channel (square) loudspeaker array • fixed media • duration: 35:19 • high-definition digital transfer from original analog tape • composer: **Karlheinz Stockhausen**

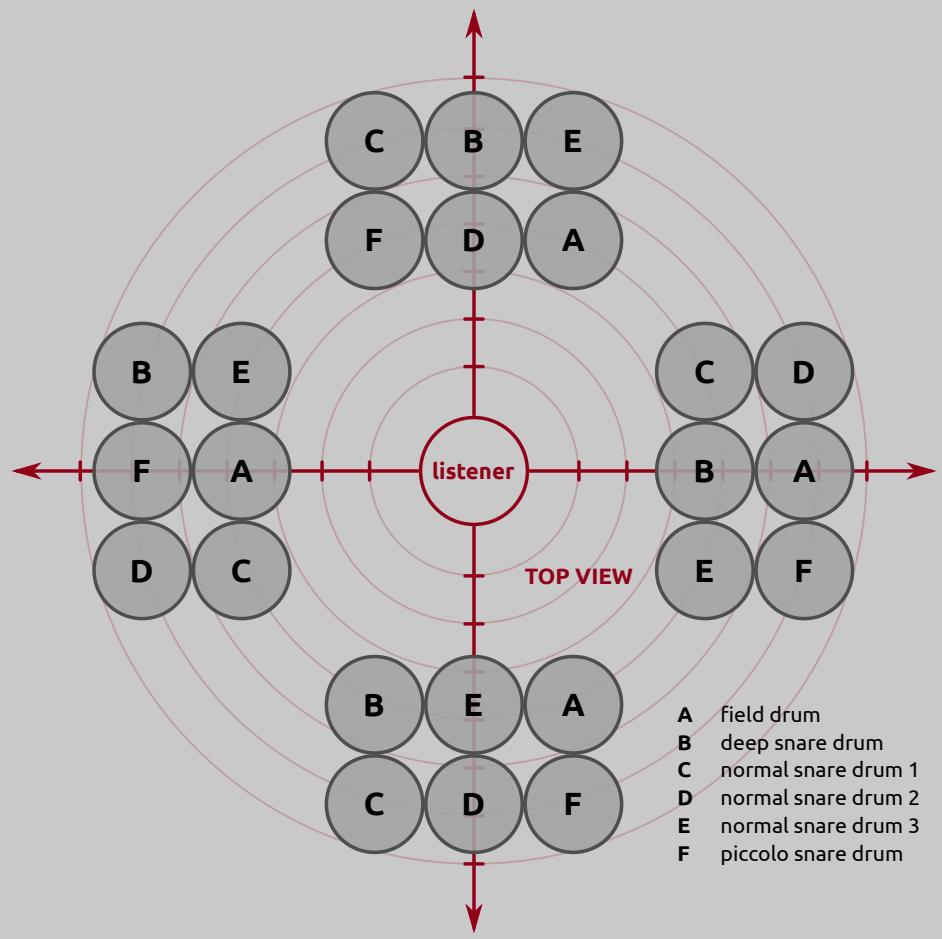
# MULTI-CHANNEL FIXED MEDIA ACOUSTIC SOUNDS

Many of my original compositions included in The Sound-Space Audio Lab Fixed Media Repertoire Project feature purely acoustic sounds recorded in high-definition surround formats. These works put the listener inside large setups of acoustic instruments.

star\_birth (2010)



impulse response (2016)





## MULTI-CHANNEL LISTENING SESSION

Listening sessions are an offshoot of The Sound-Space Audio Lab Fixed Media Repertoire Project. Instead of a concert presentation featuring complete works, a listening session features a collection of excerpts, allowing much more ground to be covered. Listening sessions can also include discussion and repetition of excerpts as a way to focus in on spatial and other aspects of the music. Sessions are presented on The Sound-Space Audio Lab Mobile Multi-Channel Electroacoustic Diffusion System, just like concert presentations.



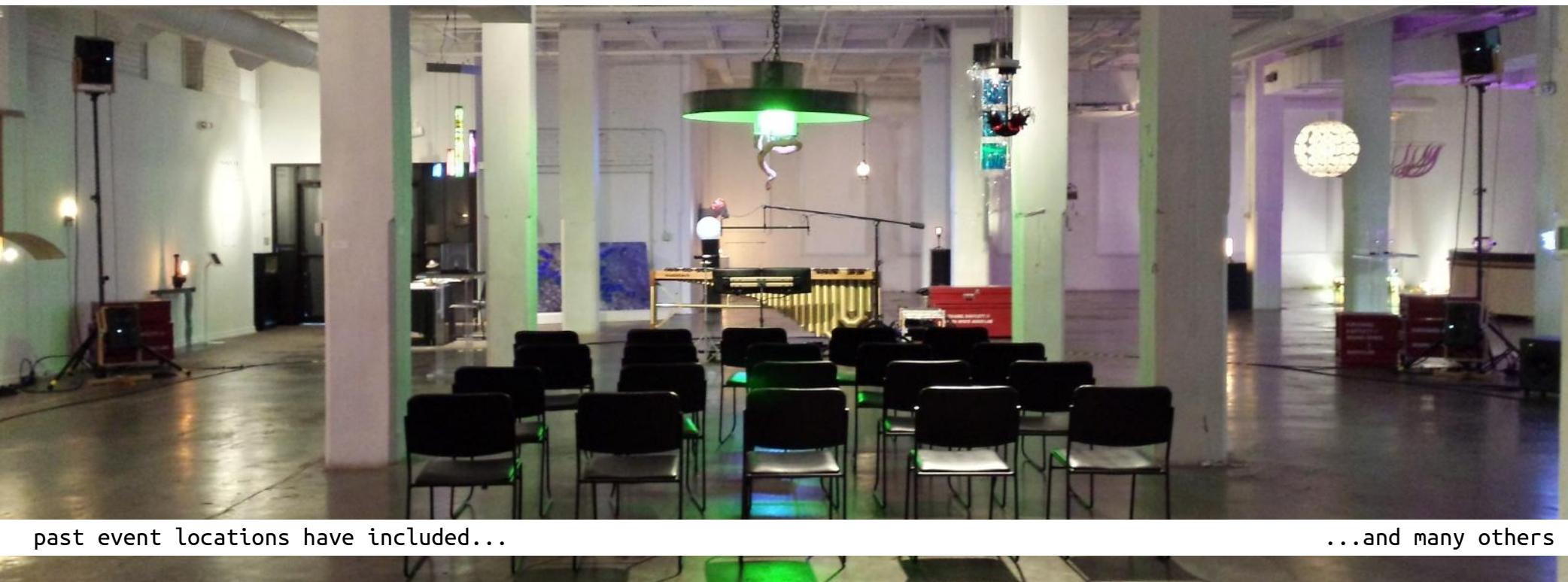
a loudspeaker array footprint of up to 50x50 ft. can accommodate large audiences

## DEMONSTRATION OR LECTURE

Finally, I also present demonstrations and lectures covering the technical (hardware and software) and artistic facets of my compositions for marimba and computer interfaces; real-time three-dimensional, high- definition, computer-generated sound; and real-time computer notation processing; as well as my compositions for acoustic instruments, which have a special focus on percussion.



# PAST EVENTS



past event locations have included...

...and many others

AS220 (Providence, RI)  
Athens Institute for Contemporary Art (Athens, GA)  
The Austin Museum of Digital Art (Austin, TX)  
The Austin New Music Coop (Austin, TX)  
ARTS Lab at the University of New Mexico (Albuquerque, NM)  
Chazen Museum of Art (Madison, WI)  
Colorado State University (Fort Collins, CO)  
Crane Old School White Space (Philadelphia, PA)  
The Center for New Music and Audio Technologies (Berkeley, CA)  
Danspace Project (New York, NY)  
East Carolina University (Greenville, NC)  
The Eastman School of Music (Rochester, NY)  
Florida State University (Tallahassee, FL)  
Heaven Gallery (Chicago, IL)  
Hotcakes (Milwaukee, WI)  
The Icehouse (Phoenix, AZ)  
Ithaca College (Ithaca, NY)  
James Madison University (Harrisonburg, VA)

Judson Memorial Church (New York, NY)  
Kansas State University (Manhattan, KS)  
KNOB Festival of New Music 2014 (Wichita, KS)  
Living Arts (Tulsa, OK)  
The Mattress Factory (Pittsburgh, PA)  
Michigan State University (East Lansing, MI)  
New Mexico State University (Las Cruces, NM)  
Northern Arizona University (Flagstaff, AZ)  
The Overture Center for the Arts (Madison, WI)  
2009 Percussive Arts Society International Convention (Indianapolis, IN)  
2012 Percussive Arts Society International Convention (Austin, TX)  
The Rotunda (Philadelphia, PA)  
Santa Fe Complex (Santa Fe, NM)  
SCA Contemporary (Albuquerque, NM)  
St. Cloud State University (St. Cloud, MN)  
Studio Z (St. Paul, MN)  
Taliesin (Spring Green, WI)  
Taliesin West (Scottsdale, AZ)

Truman State University (Kirksville, MO)  
The Tank (New York, NY)  
The University of Arizona (Tucson, AZ)  
The University of Central Arkansas (Conway, AR)  
The University of Central Florida (Orlando, FL)  
The University of Kentucky (Lexington, KY)  
The University of New Hampshire (Durham, NH)  
The University of New Mexico (Albuquerque, NM)  
The University of Texas at Arlington (Arlington, TX)  
The University of Wisconsin–Madison (Madison, WI)  
The University of Wisconsin–Oshkosh (Oshkosh, WI)  
The University of Wisconsin–Stevens Point (Stevens Point, WI)  
William Patterson University (Wayne, NJ)

# BIOGRAPHY

I am a composer, performer, and technologist. Since 2004, I have been traveling all across the US with my continuously evolving marimba+electronics system, performing solo marimba and marimba+electronics repertoire in a wide variety of venues: art galleries and museums, concert halls, dance spaces, DIY/underground spaces, and many universities and colleges. My performance visits to academic institutions often include master classes, lectures, and demos.

My mobile electroacoustic diffusion rig began with a stereo loudspeaker setup, moving to four-channel surround in 2005, then on to my first eight-channel (cube) three-dimensional surround setup in 2006, and finally upgrading to my current cube setup in 2011. During the first years of performing in my marimba+electronics format, a handful of composers wrote several new works for me, but since 2011 I have focused almost exclusively on the performance of my own compositions.

Ongoing work with computer monitor-based real-time notation in my marimba+electronics compositions began around 2008. Through real-time computer notation processing, I am able to combine the flexibility and spontaneity of improvisation, with the complex organizational capabilities of a notated score.

After much experimentation, I completed the initial work (it continues to progress) on my notation system for acoustic works in 2010, and have subsequently created a growing body of work composed in this system. The system uses multiple colors and other graphic devices in order to achieve maximum clarity, and is in general an attempt to visually represent the artistic sensibilities of the music for the performers as intuitively as possible. In order to expand my catalog of acoustic works, and record them in multi-channel, high-definition formats, I launched the The SSAL Guest Artist Recording Project in 2015, with my solo percussion work *apical topography*.



In 2007, I founded an ongoing concert series to feature my new work at the The Overture Center for the Arts, in Madison, WI. The Overture Center series has hosted the premieres of many of my works, as well as the works of other composers, and has featured collaborations with other musicians, and collaborations with artists working in other media such as dance, video art, and sculpture.

Recordings in multi-channel (surround), high-definition formats are central to my work. In 2010, I designed and built my first studio (Sound-Space Audio Lab) in Madison, Wisconsin, and between 2010 and 2013 recorded four albums there. In 2014, I moved Sound-Space Audio Lab to Placitas, New Mexico, and recorded my first album there in 2015. My recordings are not solely intended for home listening. I also conceive of my recordings as fixed-media sound works that can be projected in a concert or installation setting, especially in their fully multi-channel, high-definition versions. Over the years, I have presented all my recordings publicly in their highest multi-channel, high-definition formats. In addition to presenting my own works via the Sound-Space Audio Lab electroacoustic diffusion rig, in 2014 I started The SSAL Fixed Media Repertoire Project to present the (mostly multi-channel) fixed media works of other composers, inaugurated with a concert featuring the historic multi-channel electronic works *KONTAKTE* and *GESANG DER JÜNGLINGE*, by Karlheinz Stockhausen.

In addition to studying privately with marimbist Leigh Howard Stevens, I studied percussion performance at the Eastman School of Music (John Beck), marimba performance at the Royal Academy of Music (Leigh Howard Stevens), and hold a doctoral degree in music composition from the University of Wisconsin–Madison (Stephen Dembski). From 2011 to 2013 I was a postdoctoral associate at the Wisconsin Institute for Discovery, working on music+technology projects.

## CONNECT



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OTHER PLATFORMS: [bandcamp](#) // [facebook](#) // [flickr](#) // [instagram](#) // [soundcloud](#) // [tumblr](#) // [twitter](#) // [vimeo](#) // [youtube](#)

# timeSpacePlace: Nathaniel Bartlett's New Paradigm in Percussion Performance

By Kurt Gartner

Percussionist/composer Nathaniel Bartlett continues to pursue his vision of sharing highly nuanced performances with his audiences via live and recorded performance. Regularly, he exercises his skills as a composer, performer, improviser, and engineer. Via his website, he describes his concept in this way: "When one listens attentively to details, it becomes readily apparent that most complex vibrating bodies—be they gongs, strings, etc.—do not produce a 'note,' but rather dozens or hundreds of perceivable events that unfold over time before the complex vibrating body comes to rest. In my music's sounds—both those produced acoustically and electronically—the complex nuances are used as critical artistic components. In my computer-integrated work, the computer is often used to emphasize the constituent parts within a single acoustically produced sound, as well as how the parts evolve, and mold them into new, compelling sound objects."

His primary vehicle of expression is the marimba, but he goes far beyond, incorporating real-time three-dimensional, high-definition, computer-generated sound. Additionally, he uses real-time computer notation processing, also of his own design. For years, Bartlett has been assembling the finest components available in all links of the performance chain, from the acoustic instrument to the microphones, computer system, and speaker array. As he describes in his web site: "My performances seamlessly meld my five-octave acoustic marimba with a powerful Linux-based computer, custom computer control interfaces, a variety of hardware audio electronics, and eight loudspeakers (plus subwoofer) arranged in a cube. With the audience positioned in the center of the loudspeaker cube, an elaborate, kinetic, three-dimensional sound environment can be projected into the audience space, totally immersing the listeners in the music. In my immersive sound environments, spatialization (the positioning and movement of sounds in physical space) becomes a central musical parameter, alongside of pitch, rhythm/time, timbre, and so on."

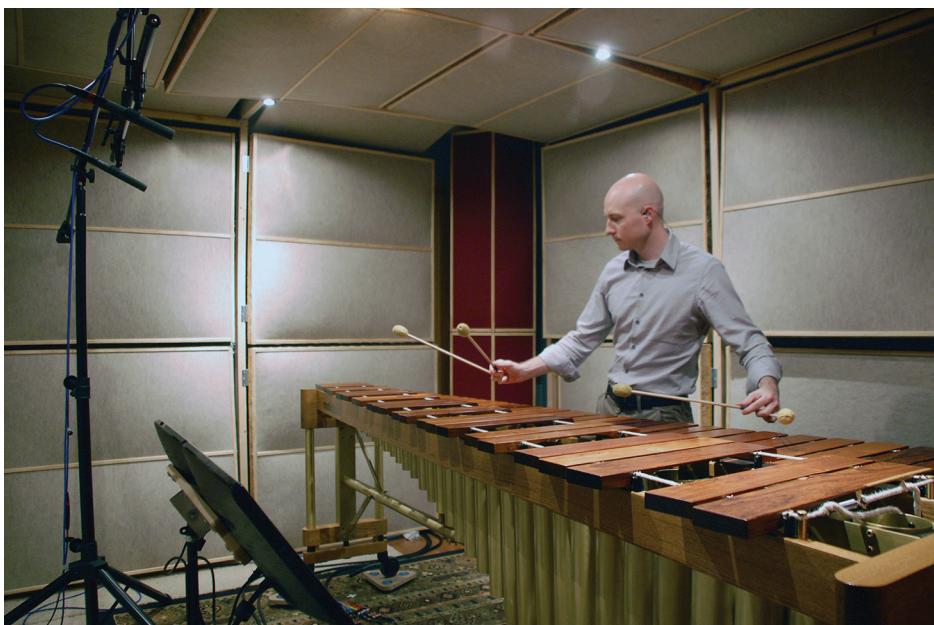
This attention to detail allows him to minimize the variables in live performance

venues—each of which has its own acoustical properties and challenges. In recent years, Bartlett has expanded his goal of realizing performances with great attention to sonic detail, creating his own label, Sound-Space Audio Lab. Under this label, Bartlett has released four albums, each of which contains his performances in multiple audio formats. Formats include HD multi-channel, HD stereo, and CD-quality stereo. In this manner, Bartlett allows his listeners to experience his recorded performances in the highest audio quality available to them.

In 2010, Bartlett released *Far Reaches*, the first album under his Sound-Space Audio Lab label. Recorded in Madison, Wisconsin, this album includes two Bartlett compositions: "star\_birth," for solo percussion (performed by Justin Alexander), and Bartlett's performance of "Heap," for solo (metallic) percussion and real-time three-dimensional, high-definition, computer-generated sound. The pairing of these two compositions on this album comprises an abstract representation of the birth and death of a star. As Alexander was in Madison to perform the premiere of "star\_birth," Bartlett was also collaborating with

locally-based artist Andrée Valley, who needed a musical component to complement her metallic sculpture exhibition. Bartlett's collaboration with Valley led to his composition and recording of "Heap," in which the most prevalent element is the computer-manipulated sound. In Alexander's recorded "star\_birth" performance, Bartlett's strategic placement of microphones gives surround sound listeners the experience of hearing the work from within Alexander's percussion setup.

The second album under Bartlett's label is *Trichotomic Ecology*, released in 2011. The title (and only) track on this album represents an extensive musical dialogue between Bartlett (playing marimba), percussionist Geoff Brady, and violist Nils Bultmann. The composition was also a component of Bartlett's doctoral dissertation project at the University of Wisconsin-Madison. Like many of his other works, Bartlett includes a computer-generated sound component in this composition. These computer-generated sounds manipulate and heighten nuance of the performers' acoustic sounds. Also, each player occupies a unique spatial position relative to listener, further



Nathaniel Bartlett's modular studio setup



Nathaniel Bartlett's mallet/body-tracking computer control interface.

intensifying the listening experience. Furthermore, Bartlett makes use of his computer-generated notation for all performers in this work.

In preparing and rehearsing the work, Bartlett recognized the deeply personal musical style of Brady and Bultmann. His notational system allows a great freedom of individual and complementary expression among these musicians. During the interview for this article, Bartlett elaborated further on his need for and development of his notational system. By the time he was developing the “star\_birth” project, Bartlett was feeling confined with the traditional meter-based notational system for his music, which is largely ametric. He wanted to avoid “having to write music that from a metrical standpoint looked very complex yet didn’t sound that complex.” His system uses spatial notation, colors, and other elements to capture musical intent in a literal and clear “performer-friendly” way: “We’ve all played those pieces with a 13-tuplet nested under a 7-tuplet with embedded rests. There’s no way that in certain contexts this type of metrical concept will be perceived precisely—that’s not even the intent. It’s about getting the music in the right temporal position as opposed to the right metrical position. For my taste, I was able to solve some of these nagging problems.”

Incidentally, Bartlett continues to compose for multi-percussion as well as marimba and computer-generated sound. His latest composition (and likely component of his next recording project) is “luminous machine,” which also incorporates Bartlett’s unique notational system.

Another collaboration with the sculptor Valley, Bartlett released the album *((clang))* in 2012. Having acquired new equipment such as highly sensitive microphones, Bartlett achieved heightened levels of quality and precision of recording for this project. Like prior projects,

*((clang))* incorporates solo marimba, computer-generated sounds, and metallic percussion instruments that create sonorities or sound sculptures. Bartlett and Valley also developed installation versions of the piece, in which viewers of Valley’s sculpture create soundscapes in real time.

In 2013, Bartlett released *timeSpacePlace*, his most recent album. Its two tracks, “a-side” and “b-side” offer two versions of the same composition, which are set apart by the different algorithmic techniques applied to each rendition. Bartlett set this work to the video installation *Unseasonable Events Change Hands* by Toby Kaufmann-Buhler. Their combined work has been presented both live and also in gallery installations. The general concept of the video installation relates to the cycle of the four seasons. Bartlett’s music changes in nuanced, abstract ways with video

progression. Much of the video piece is broken into different frames shown simultaneously—waves of frames with delay reminiscent of animation. The viewer sees these juxtaposed points of time as time and delay effects of the music complement this visual element. Bartlett calls this element “a visual depiction of time reflected in my music.”

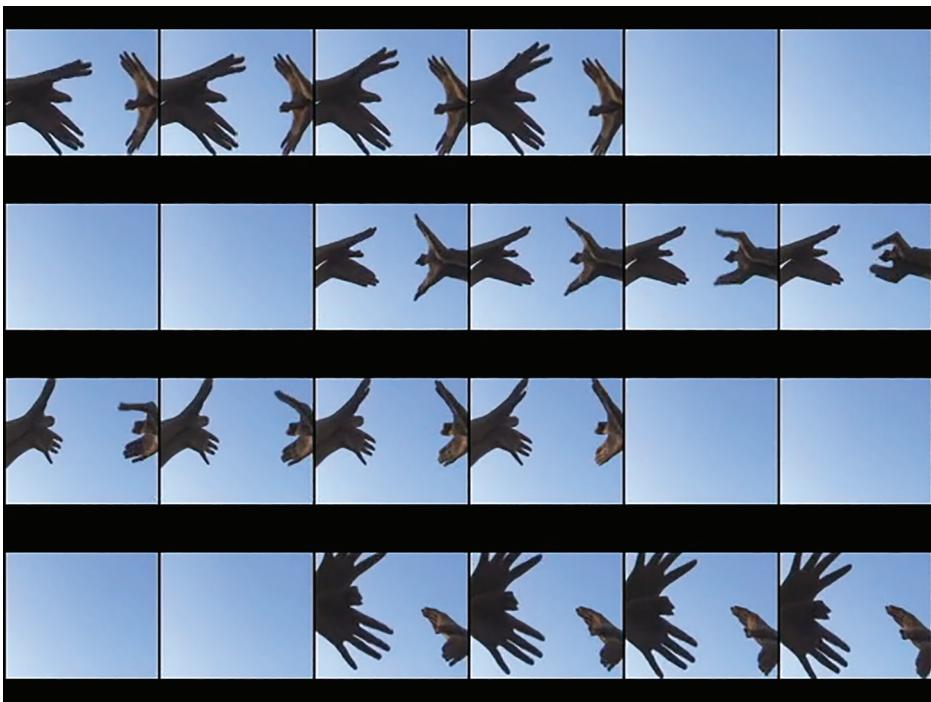
Also, *timeSpacePlace* marks Bartlett’s first use of a computer interface for tracking mallet and body motion, then initiating computer responses to his physical performance gestures: “You’re very physically engaged with marimba gestures, limiting your options to interact with the computer. Pedals work very well and are still a part of my computer control interface, but I realized that there were many other technologies available that allow one to interact with a computer.”

Bartlett recounts a project at the University of Wisconsin in which a professor directed students to interact with sound in a 3-D space using video cameras. Eventually, project participants switched to depth cameras using infrared laser light, solving many of the tracking problems associated with regular optical video cameras. Bartlett further developed this system for his own use in live and recorded performance.

With Bartlett’s tracking system, the computer can be instructed to ignore all gestures beyond a pre-determined threshold. Therefore, the computer does not track ordinary performance gestures to manipulate sound; tracking commences when mallets exit the designated “marimba space.” Tracking is based on the order of appearance of mallets, each of which is assigned a uniquely colored crosshair. Bartlett sees a mirror image of himself in this virtual (infrared) representation, allowing him to execute gestures in a



Nathaniel Bartlett’s live setup



Toby Kaufmann-Buhler's piece "Unseasonal Events Change Hands"

precise way. Similarly, another device monitors the motion of his feet. Currently, Bartlett is developing a piece in which his a third sensor will track his torso, arms, and other points in space. The infrared image of Bartlett has its own visual appeal, and his intent is to project this image for live audiences. This, too, presents another order of complication regarding his self-contained rig, already brimming with his marimba, computer, monitors, and loudspeaker array. For now, his decision to employ video in live performance is largely a function of a given venue's projection capabilities. In similar fashion, he is considering the projection of his musical notation, as long as this element enhances the aesthetic of the total work.

There are advantages as well as challenges to both live and studio performance environments, a fact readily acknowledged by Bartlett. The studio setting is Bartlett's "abstract perfect universe," in which he can place microphones and instruments in a controlled environment of his design. Additionally, all marimba and computer sounds are isolated in headphones, allowing for the highest possible recording quality. Once he has produced his recordings, the quality of realization is limited primarily by the listeners' playback equipment. Again, Bartlett provides content in multiple formats, enticing listeners to seek the best possible listening experience. In following with his "D.I.Y. ethos," he has even created his own modular system of sound treatment panels for the studio environment. Suitable for installation in a small room like the bedroom of a house, the system was portable enough to take on his move from Madison to New Mexico.

The primary advantage of presenting live performances is the assurance that listeners will experience his music in intended high-definition, eight-channel realization. Challenges of live performance are generally based on the acoustical variables inherent to each venue in which he performs. Of particular concern is the variety of feedback sources that may be introduced to the loudspeaker system. The slight loss of expressive nuance due to the use of a gate effect on a particular sound within his performance represents the trade-off for his assurance that his audience will experience his music with the live performance aesthetic and in the intended eight-channel mode of delivery.

A second and perhaps equally challenging aspect of live performance is logistical in nature. Bartlett has spent a great deal of thought in refining the manner in which he transports the equipment necessary to perform live: "There's a whole logistical side. Even if you have really nice audio equipment, if you can't deploy it in a really effective way, then you can't take your music outside of your lab or studio."

To this end, Bartlett has created a new suite of road cases, which allow him to transport his marimba, computer, monitors, and loudspeaker array in very compact space; the entire rig fits within his minivan. Additionally, all equipment is cased in order to facilitate the most efficient setup process possible; the equipment within each case is packed for proximity and ergonomics. Even his stands and mounts are customized for efficiency.

Nathaniel Bartlett is extraordinarily meticulous in his vision of his music, how it should be performed, and how best to deliver

the performance to his listening audience. Equally powerful are his creative and organizational sensibilities. His attention to detail and musical sensitivity is clear in every aspect of his performances, which take listeners to new places—the ageless essence of music experienced in the very latest manner.

*Nathaniel Bartlett's website is [nathanielbartlett.com](http://nathanielbartlett.com).*

**Kurt Gartner** serves as Professor and Program Director for Music within the School of Music, Theatre, and Dance at Kansas State University. **PN**

# Nathaniel Bartlett: Modern Marimba<sup>3</sup> Combining marimba and computer-generated sounds

By Kurt Gartner

If you have the opportunity to experience one of his live performances, Nathaniel Bartlett is likely to change the way you think about music. Utilizing a seamless combination of contemporary composition and performance techniques for marimba and computer-generated sounds and effects, Bartlett is constantly challenging himself and his audiences. Whenever he performs or speaks about his projects, he demonstrates his passion and depth of understanding of all aspects of performance techniques, technology, and aesthetics.

The marimba is capable of a great subtlety and range of expression. Bartlett calls it “the instrument of our time.” Therefore, it follows that any effective integration of electronics in performance would require high-end components, including the computer hardware and software, as well as all links within the sound reinforcement chain. As Bartlett puts it, we are in a time when popular technology is “marching backwards” in terms of digital audio. While the portability and convenience of mp3 players have made them ubiquitous in our culture, the data compression algorithms of these players can really attenuate the nuances of recorded music.

Bartlett is moving in the opposite direction, seeking an electronic system that actually enhances the finesse of marimba performance. Currently, his sound projection system includes eight loudspeakers and a subwoofer. The loudspeakers are arranged at the corners of the performance space—above, below, before, and behind the audience. The result is an “ambisonic” effect: true three-dimensional sound

that allows listeners to hear and process sounds, which, if not placed throughout the 3D auditory field, would seem much denser in texture. All of these sounds are generated at 96 kHz sampling rate and 24-bit depth, far exceeding the definition and dynamic range of CD audio and providing a match for the refinement of the marimba’s tones.

To realize his performance concept of “modern marimba<sup>3</sup>”—the seamless fusion of his instrument with computers, electronics, and an



eight-channel, cuboid speaker array—Bartlett has collaborated with composers who share both his vision and knowledge. Among Bartlett’s first major projects was a collaborative effort with composer Allan Schindler, who is Professor of Composition at the Eastman School of Music and director of the Eastman Computer Music Center. Bartlett commissioned Schindler’s work “Precipice – for solo marimba and computer-generated sounds” in 2003, and premiered the work in 2004. (Originally, Schindler developed the work for a four-channel ambisonic sound system, then adapted it for Bartlett’s new eight-channel array.) In an excerpt from Bartlett’s Website ([www.nathanielbartlett.com](http://www.nathanielbartlett.com)), Schindler comments on the work:

This piece gave me the opportunity to explore the very wide range of textures and timbres available on extended five-octave marimbas. In the hands of virtuoso soloists employing contemporary four-mallet techniques the marimba often does not really sound like an ideophonic [*sic!*] percussion instrument, but rather can convey almost vocal-like phrasings

as well as an extraordinary range of colors. Many of the computer-generated sounds, especially during the latter half of the piece, were derived from recordings of Nate playing his marimba, but often this may not be readily apparent. Through granularization (slicing tones into tiny fragments, then stringing and intercutting hundreds of these sound grains per second into timbral “necklaces”), one can create timbres reminiscent of vocal, aerophone and other types of natural and environmental sounds.”

Schindler’s work is the centerpiece of Bartlett’s 2006 debut recording, *Precipice – modern marimba*. Also included on the recording are “Interlude – for marimba and computer-generated sounds” by Greg Wilder, “Silhouettes” by Augusta Read Thomas, and “Vermont Counterpoint” by Steve Reich.

Bartlett’s latest commission project again involves Schindler, in conjunction with a grant from the Fromm Foundation. Schindler’s new work (tentatively titled “Take Flight”) will fully exploit Bartlett’s now-expanded eight-chan-

nel sound system and his vast array of pedals and velocity-sensitive triggers. In performance, Bartlett will exercise real-time control of the computer effects and certain aspects of the computer music itself, creating a much more organic musical situation for himself as the performer. Such works may include improvisation, performer-initiated computer events, and fixed elements.

Bartlett likens fixed elements of computer sounds generated within a performance with the fixed sets on the stage of a dance concert. Although the sets may be fixed, the dancers have the freedom to interact with the sets in different ways (e.g., relative to space and time). Similarly, Bartlett treats fixed (pre-recorded) elements of computer music as soundscapes around which he plays.

In addition to the integral nature of computer-generated sounds as compositional elements of his performances, Bartlett uses the real-time processing capabilities of his system to create a synthetic acoustical environment for the marimba itself. For example, he may assess the acoustical properties of a room as being too "dry"; subsequently, he can configure the computer effects to simulate the acoustical environment of a larger hall. This type of effect restores the singing, legato quality of the marimba in its optimal environment without sounding synthesized.

Because the loudspeakers are placed throughout the venue, Bartlett performs without headphones or monitor speakers. In this way, he can maintain the auditory perspective of a soloist performing with an orchestra—effectively adjusting balance and blend and hearing the composite sound in a context similar to that of the audience.

Bartlett is as particular about the quality of his recording projects as he is about his live performances. Bartlett's recordings are produced as

hybrid multi-channel super audio CDs. One of the key advantages of ambisonic audio recording and production is that it utilizes high-definition 3-D in "sound fields" (rather than the channel-specific placement found in theater-type surround-sound systems). Although he always performs live concerts using his own high-definition 3-D audio system, Bartlett's hybrid multi-channel super audio CD *Precipice – modern marimba* may be played back in several formats (i.e., super high-definition five-channel surround, super high-definition stereo, and CD stereo, which plays on normal CD players).

The works Bartlett performs emphasize concept of "spatialization," in which the placement of sounds in the 3-D field is essential to the compositions themselves. Lighting that draws attention away from the loudspeakers as "sources" of sound may enhance the auditory and psychological effects of spatialization. Bartlett points out that while we must turn our bodies to see and process the full 3-D visual field, we more easily process three-dimensional audio information.

In concert, Bartlett encourages his audiences to experiment with closing their eyes to intensify the 3-D audio effect. In addition to placing computer-generated sounds anywhere in the 3-D field, Bartlett can project his marimba sound in a similar manner, denying the listener's expectations to "hear what they see" in front of them, and further meshing the marimba and computer sounds.

The heart of Bartlett's system is a computer running software on the Linux platform. His primary performance controller interface is PD (Pure Data). With this and other software, he controls live processing, pre-recorded sounds, and other elements of performance. He is concerned with precision of audio quality, from its high-definition rendering, through high-quality cables, to high-end loudspeakers.

Bartlett plans to make another recording this summer to complete his next recording project, tentatively titled *Powered Flight – music for solo marimba and computer-generated sounds*. The record will include a prelude and postlude of unaccompanied marimba music: "Tender Buttons" and "Alta" by Stephen Dembski. Also, it will include Schindler's "Take Flight" and other new works by Dembski and Wilder.

While his primary goal may be to offer performances with the highest artist merit, Bartlett is establishing himself as a key player in a fundamental paradigm shift for musicians and audiences alike. Listen to Nathaniel Bartlett, and take the advice of word-jazz paradigm shifter Ken Nordine: "Stare with your ears."

**Dr. Kurt Gartner** is Professor of Percussion at Kansas State University. As a 2006–07 Big 12 Faculty Fellow, he collaborated with the percussion studio and jazz program at the University of Missouri. There, he provided instruction and performances in Afro-Cuban music and applications of technology in music. He completed his Doctor of Arts degree at the University of Northern Colorado, where he received the Graduate Dean's Citation for Outstanding Dissertation for his research of the late percussion legend Tito Puente. In association with this research, Gartner also studied percussion and arranging at the Escuela Nacional de Música in Havana, Cuba.

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**MARIMBA FESTIVAL**



# New Works for Solo Percussion by Nathaniel Bartlett

By Justin Alexander

Percussionist/composer Nathaniel Bartlett is known for his marimba+electronics performances, in which he and his Malletech marimba interact with real-time computer notation processing in a high-definition, eight-channel, three-dimensional “sound cube” that immerses audiences in a spatialized sound space. While his command of the marimba, knowledge of modern computing (he built his own zero-decibel silent computer), and dedication to touring and performing in a variety of venues are a testament to his skills as a performer, Bartlett is also a dedicated and gifted composer, holding a DMA in Composition from the University of Wisconsin–Madison.

Bartlett’s compositional output has focused on integrating electronics and real-time processing with the marimba, but several of his recent works for percussion focus extensively on acoustic percussion instruments. These compositions for non-pitched percussion—“star\_birth,” “apical topography,” and “luminous machine”—complement the existing solo multiple-percussion repertoire by expanding the expressive capabilities of the genre. Each piece uses Bartlett’s unique graphic notation system that allows expression of varying time relationships via color-coded noteheads, graphic durations of notes, and extended technique symbols. While similar in notation, the works exhibit different musical moods that emerge depending on Bartlett’s choice of instrumentation and his compositional aesthetic.

Although the graphic notation system may appear to create rigid, fixed musical ideas, the use of spatially-constructed phrases, notated through this color-coded system, creates a lyrical, gestural model of notation that is both performer-friendly and allows for an interpretation of the music that more closely aligns with Bartlett’s intent than traditionally noted music. Musical ideas such as nested polyrhythms, multi-line counterpoint, and *subito* tempo shifts are all written out for the performer

spatially, aiding in interpretation and musical integrity. Following is an overview of each of these new works for solo percussion.

### “star\_birth”

This piece, written in 2012, was Bartlett’s first exploration into composing with his graphic notation system. Scored for concert bass drum, pedal bass drum, tom-toms, bongos, cans, temple blocks, brake drums, tam tams (low and high), China cymbal, and sizzle cymbal, “star\_birth” is a rich, dense composition that allows the performer to explore and connect long, sustained tones of the concert bass drum, gongs, and cymbals with quick, gestural phrases on bongos, brake drums, and temple blocks.

The most striking aspect of Bartlett’s scores is the use of colored noteheads and beams to relay information about note length, placement, and temporal relationship. Dark blue notes, for example, are ametrical, relying purely on spatial position in the score to dictate their point in time, and on the length of the dark blue beam to inform note duration. Green notes are quasi-metrical, in which they retain conventional metric properties but move freely in time, enabling graphic depictions of *accelerandi*, *rallentandi*, etc. Dark gray noteheads are strictly metrical, and retain all conventional metrical properties.

Bartlett uses several implements to achieve a variety of tonal effects, including tam tam mallets, felt timpani mallets, hard rubber mallets, snare drum sticks, wire beaters, and wire brushes. Although “star\_birth” is largely composed of ametrical notes, several passages contain a mixture of all three noteheads in close proximity. “star\_birth” is a study in durations, with large sections of the piece comprised of a series of decays from the ringing instruments. It requires a performer comfortable with navigating space, gesture, and large dynamic shifts.

### “luminous machine”

Scored for stainless steel bowls, gongs, finger cymbals, “singing” bowl gong, metal sheet, triangles, 6-foot threaded steel rods, claves, and temple blocks, “luminous machine” has a

decidedly more shimmering quality than “star\_birth” or “apical topography.” Musically, the material consists of periods of alternation between metrical phrases in the steel rods and ametrical figures in the claves, woodblocks, and higher-pitched metallics like triangles. Considerable portions of this piece use metrical and ametrical rhythmic figures simultaneously, developing the language used in “star\_birth.” Here, Bartlett juxtaposes ametrical and metrical notes in similar phrases, creating a “focusing” effect in the primary line. While incorporating more metrical sections, “luminous machine” still retains the meditative, quasi-improvisational feel of “star\_birth” while offering a vastly different sonic landscape.

### “apical topography”

Scored for concert bass drum, large tom-tom, 2 congas, 2 bongos, threaded steel rods, triangles, crotale, woodblocks, and small gongs, “apical topography” is the most percussive of Bartlett’s new compositions for solo multiple percussion, utilizing a strong, galloping rhythmic motive in the drums. Alternating with these motives are sparse, metallic sound ambiances. Musically, this may express Bartlett’s most mature work with this notational system, as apical topography combines the shimmering qualities of “luminous machine” and the long decays and ringing lines of “star\_birth” with a powerful rhythmic element. The use of motivic cells of source material, which are developed and mutated throughout the piece, holds the work together as it travels through a large expressive palette.

Scores and recordings of “star\_birth,” “luminous machine,” and “apical topography” are available at [www.nathanielbartlett.com](http://www.nathanielbartlett.com), where you can find out more information about Bartlett’s music.

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