(The Rules and Measures of Audience Engagement)[1]

A performance is predicated on the live and on the real. A performance is an event, a happening in space and time that cannot be repeated the same way twice. While not all performances themselves need be defined by a set of rules, most adhere to prevailing social norms and general notions of what makes a performance memorable.[2]

In this essay, I will describe the various aspects of performance type (both related and not-related to music), and argue for basic principles of performance that may serve as useful measures in weighing performances against one another. While certain aspects of performance do not extend beyond the borders of a discipline, I will attempt to highlight those aspects that do, and ultimately describe how these aspects correspond to the context of real-time musical performances involving recent technologies.

Before I can begin to address the principles of performance, I need to expand upon the performance boundaries defined by disciplines. An athletic performance is different from an oratorical performance (i.e. a debate), is different from a musical performance. Or are they? All of these *human*[3] performances share mental and physical aspects that are linked by our shared subjective views about them. I will correlate how collective subjectivity informs the objective notion of what is 'good' in performance.

In addition, performances within disciplines contain differences. Athletic performances vary between sports and musical performances vary between musical genres, but each contain performance similarities across its own related discipline. I take varying performance types within a discipline into account as I describe performance measures.

In attempting to clarify a discipline's boundaries, I first sought to define the context by asking, what is the objective of a performance? Must a performance be weighed against its own set of rules? An athlete performs well in some sports (100m, 200m, 400m dash) and not in others (800m - 10000m run); yet, many measures exist that serve to weigh the athlete's performance across sports –VO_2 levels, time trials, time records per sport and per competition, etc. Although there exist measures that serve across performance types, the weight of these measures will be different depending on the context. The stellar performance by Billy Mills in the 10000 m run in the 1964 Tokyo Olympics made him the first and only American to win a Gold Medal in the

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[1] See Appendix A, p 13 of this essay.

[2] Performances may be witnessed 'live' in real-time or recorded 'live' and witnessed later, which still meets my definition of an event: a happening in space and time that cannot be repeated the same way twice.

[3] The key here is the notion of *human*, which serve as performers when performances are traditionally held. Once performances are devoid of the human element, fundamental principals and pre-conceived notions of performance are challenged and I would have to also include other performance types, like car engine performance. This essay focuses on performances containing a human element, and although non-human musical performances exist within acousmatic and electroacoustic music, these genres will not be discussed as these genres hold performances 'without performers.' Here, performers (i.e. humans) is instrumental to my discussion of performance.

event, but compared to modern Olympic's performance times, Mills wouldn't have placed 17th.[4] Mills 1964 race is considered one of the Olympics greatest triumphs, and in order to not lose sight of what makes a performance 'good,' I must be careful when comparing across contexts. In cases where these weighted differences apply to music, I will highlight examples to demonstrate their contextual measurement.

Similarly, what is the objective of a musical performance? Is the objective of a musical performance to reveal the range of the instrument, to entertain an audience, to sell records, to convey a particular message, or all of the above? In music, both the artists and the compositions themselves may have different objectives. The context of a performance setting (classical concert hall vs. rock stadium) helps define the performance objectives as well as the roles of audience and performer.[5] Because performance objectives may change with the performance context, I will observe different contextual settings in order to extract more useful performance measures that serve across contextual boundaries.

Two points salient to musical performance must be addressed. One, different artists (composers, musicians) may have different objectives. I alluded to this distinction when I addressed the context of a performance venue. In finding measures that fit across these various performance types, I will weigh each performance measure accordingly.

Two, different musical works may serve different functions. An etude is an exercise that not only showcases an instrument and performer's virtuosity, but also showcases the ability of a composer to explore the boundaries of an instrument. A symphonic work for orchestra functions differently, and as such, an etude must be weighed differently against a symphony.[6] Musical works are critically assessed compared to similar musical works, and I take into account that performance measures must also fit across musical composition types.

<div align="center">Subjectivity vs. Objectivity</div>

Getting at objective performance measures is a difficult task, and it is important to remember that the measures I subjectively outline here serve merely as loose, *objective* weights upon which to balance the term 'good' alongside performance. Objectivity is a romantic ideal. Humans are prone to biases, and our judgmental objectivity cannot escape the interpreted bias of even the trained expert.[7] In music, the Romantic movement was as much about conjuring and controlling nature from an objective view as it was the expression of the subjective.[8]

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[4] Compared to the 10000 meter run at the 2000 Sydney Olympics.

[5] In other cases, the modern art installation can help challenge the roles of audience and performer, and alleviate these traditional constraints.

[6] Competition categories help elucidate these different musical contexts, as musical competitions reveal how particular musics will be judged.

[7] Peter Galison, "Objectivity is Romantic," *Surroundings Surrounded* ed. Peter Weibul. 214

[8] class notes. MUS 664: Music in the Romantic Era. (Fall 2010).

Honestly, there are no true *objective* measures. Objectivity is not something apart from ourselves but rather a social, collective agreement upon certain subjective interpretation(s). Despite this difference, we can still come to consensus about *objective* and useful measures for weighing a performance. Collective subjectivity offers us a glimpse of the objective 'good' by adding together multiple, subjective accounts taken across disciplines.

Inversely related to my *objectivity* of useful measures to weigh across performance types, are inherent subjectivities within disciplines, including music. Barry Green and W. Timothy Gallwey, writers of The Inner Game of Music, agree with me that the subjective is as much involved in a performance as the objective judgments, and I will not shun away from the complexities the subjective present.[9] In performance, there exists both a subjective self-expression brought forth by the performer and a subjective interpretation of the viewer. "The artist's accomplishment is never the same as the viewer's interpretation... A work of art is dependent on the explosion made by the onlooker."[10] I recognize that there is a subjective view of the performer of his performance during the performance and the subjective view of the audience of the performer's performance. I consider audience perspectives and the performer's perspective as a collective in order to discern what is 'good' in a performance.

<center>(Break Out Your Ruler, It's Time To Measure)</center>

I would like to first start introducing useful performance measures with a look at the recording industry. In recording, the objective is to get the best take onto tape. The "best take" is meant to be the best performance, but what constitutes the best performance is not always articulated clearly. From countless hours in the studio, I personally observed many bands and artists perform songs not just numerous times, but upwards of up to 30+ or 40+ times. Words I commonly heard in describing the best take involving multiple performances were: "the bass and drums are in the pocket," "this take has the highest energy," "yeah, it had that drive," "most energetic," "flowed together," "I hit it that time," "played simply and effectively," "not busy," "we communicated well on that last one." While these descriptions are all subjective views, common threads emerge which point to three main principles that define a good performance. The **timing** is on, the **energy** drives the performance forward, and if the performance had multiple performers, there was a strong **interplay** between the players and the performance.

The **energy** captured on tape is often the most audibly apparent[11], and the most fought for by producer, engineer, and members of the recording group. Producer Steve Jordan commonly joked that the first take was the best take, and his comment referred to a group's initial relaxed

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[9] Barry Green and W. Timothy Gallwey, *The Inner Game of Music*, (Doubleday, New York, NY 1986), 10-14, 145-146.

[10] Marchel Duchamp.

[11] I say 'audibly apparent' to mean that many subjective views agree upon the 'feel' of a take. Because the majority of subjective views are in concert, the energy is objectively apparent.

attitude, with less mental energy spent on thinking about mistakes. After countless takes and hours spent working the same song, the selected performance for the record usually was, interestingly enough, the first or second take.[12]

As I mentioned before, a performance is predicated on the live. The live consists of more than just sound or sight, but the experience requires all the senses. A performance is based upon the total experience, perhaps one reason why people are spending an increasing amount of money on live performance.[13] Why do people still go to live music if they can hear any type of music at any time and from anywhere?

People want to experience the live because of the experience.[14] Because a performance requires all the senses, there is more to a musical performance than just the music. The artist must think about other experiential aspects than just musical preparation in order to give the performance, the experience, a heightened meaning. The audience will more likely remember a performance if the performance engages all the senses because "there are more 'hooks' into the memory that make it easier to retrieve." [15] Regardless of the subjective view of what is good or bad, more people will remember an event if they are engaged with the material. With more sensory experience, people are more likely to remember a performance and talk about it, offering many reasons why people continue to discuss the premiere of Stravinsky's *Rite of Spring* in Paris.[16] The collective accounts of a performance suggests that the performance which **engages its audience** will more likely remain in people's minds.

"You gotta be on time. You gotta have your uniform. Your stuff's got to be intact. You gotta have the bow tie. *You got to have it*. You can't come up without the bow tie. You cannot come up without a cummerbund ... [The] patent leather shoes we were wearing at the time gotta be greased. You just gotta have this stuff. This is what [James Brown expected] ... [Brown] bought the costumes. He bought the shoes. And if for some reason [the band member decided] to leave the group, [Brown told the person to] please leave my uniforms ...."[17]

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[12] Bands selecting their first and second takes for their record are taken from personal accounts working as an assistant engineer at Brooklyn Recording studio. These accounts were taken across multiple time-intensive sessions over the course of 18 months, working with producers Steve Jordan, engineers Joe Blaney, Niko Bolas, and Joe Chiccarelli, and artists Rufus Wainwright, Tony Malaby, and Drew Gress.

[13] Grabstats.com http://www.grabstats.com/statmain.asp?StatID=73 (accessed March 22, 2011).

[14] "Baseball, to me, is still the national pastime because it is a summer game. I feel that almost all Americans are summer people, that summer is what they think of when they think of their childhood. I think it stirs up an incredible emotion within people." ~Steve Busby, in *Washington Post*, 8 July 1974

[15] MIT professor of neurobiology, Matt Wilson, TIME.com, *TIME*. http://www.time.com/time/health/article/0,8599,1817329,00.html (accessed March 22, 2011).

[16] The premiere caused a riot and rocked both the music and art worlds. NPR.org. *NPR*. http://www.npr.org/templates/story/story.php?storyId=88490677 (accessed March 23, 2011).

[17] Gross, T. (1989). Musician Maceo Parker (Fresh Air WHYY-FM audio interview). National Public Radio. (accessed March 22, 2011).

A performance extends beyond the music, and so, if a performance is to become memorable, the performer must "go all the way."[18] By taking care of the details surrounding the music in order to focus the audience's attention to the musical performance, or by allowing for more senses to be engaged (video, dance synchronization) within a musical performance, the artist enables a more heightened performance experience. A heightened experience provides more memory 'hooks', a justifiable outcome of a 'good' performance.

In addition, the subjective translation of a 'good' performance is proper mental preparation. In sports and in music, the mental game of both disciplines state clearly that overcoming the mental battles (in practice and in performance) *translate* to a good performance. "The mind is silent when a performance is going well. When the body is doing its job, there is no need for mental reactions."[19] Phil Jackson, winning coach of eleven NBA Championships, expresses the power of visualization and mental preparation of athletes.[20] Jackson's coaching style, along with his team's performance successes, augment the idea that the mental state of a performer effects his performance. This mental state is similar to producer Steve Jordan's clairvoyant view that the band's first take was best because of the relaxed attitudes of the band members. The subjective mental state within a good performance serve my objective performance measures. While the mental state of a performer is not known to the audience, the more objective outcomes are. This is reaffirmed by musician's comments during playback. Again, these outcomes are– the perceived **energy** of the performance and/or discipline, the performance **timing**, and the **interplay** between performers and the performance.[21]

Examining music and musical performances specifically, I found there are three important elements that can be used as performance measures across musical performance types: **execution**, **creativity**, and **silence**. These three elements, as I will argue, closely mirror the three general performance measures (**timing**, **energy**, **interplay**) I outlined through recording performances inside a professional recording studio.

Execution corresponds to how a performer executes a piece according to the elements of music (timing, pitch, dynamic articulation).[22] How a performer executes a performance, from difficult passages to playing the groove/backbeat to a song is highly dependent upon a performer's timing. Timing is not the rhythms of the music, but the musicianship, a working

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[18] Memorable events and performances can both be bad and good, but being memorable is an integral aspect of a 'good' performance.

[19] James Nixon Curry, "Body Music: An Examination of the Physical and Mental Similarities of Sports Performance and String Music Performance" Ph.D. Diss. (Northwestern University, 2006) 92.

[20] Ibid. and
Phil Jackson. *Wikipedia*. http://en.wikipedia.org/wiki/Phil_Jackson (accessed March 27th, 2011).

[21] Interplay is expressed with two notions in mind: listening and creativity.

[22] I am not specifically addressing the five characteristics of sound: frequency, amplitude, timbre, duration, and location, but I am addressing how performance approaches these elements. Timbres are associated with an instrument and creative playing style and as such, falls under creativity and will not be addressed with execution.

knowledge of an instrument(s) within performance. The hard labour of practice for performance can be noted in the execution of a performance. Without practice, there cannot be good timing.[23] Good timing also allows for musicians to play together, locked and "in the pocket." Timing does not refer to how a performer articulates a passage of music, and musicians like Jimi Hendrix, John Scofield, and Charlie Parker are known for their dynamic approach to their music. Timing is especially important in classical performances, where notes and dynamics are explicitly expressed. Timing, pitch, and dynamic articulation may be learned over time, and while there are many books dedicated to unlocking the secrets of practicing and performance execution, there is no one formula for developing these techniques.

Silence refers to knowing what to play, when. While the execution of a performance dealt with played notes, silence is the space between notes. As the great Miles Davis offered, "Don't play what's there, play what's not there."[24] Silence suggests that listening and interplay exist inside the music, and great performances deftly use silence to highlight the various instruments, the melodic or harmonic material, or to generate informed responses. For instance, African drumming places more weight on silence inside the music than on the notes being played.[25]

With silence comes the ability to **listen**.[26] "We get along with eye contact; we also get along by listening to one another. Not only that, but we also get along because of rhythms we have learned over the course of the years. Above all there is harmony because we got to listen to one another. It's all about a feel."[27] Listening is necessary to producing an interplay between musicians, and this action only comes with silence. How can you listen when you're not silent?

Creativity reveals two aspects about a 'good' performance. New ideas are expressed and expectations are broken or met with creativity, and both of these aspects engage the audience. Creativity requires a certain knowledge of the discipline, because new and original ideas about a topic suggest an intelligent understanding of the topic.[28] In music, original ideas show an understanding of the musical language, including forms and harmonies. Similar to a musician's interplay with the music, a listener also engages with the musical performance. New, creative ideas enable a 'good' musical performance through the idea's ability to engage a listener.

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[23] James Nixon Curry, "Body Music: An Examination of the Physical and Mental Similarities of Sports Performance and String Music Performance," Ph.D. Diss. (Northwestern University, 2006).

[24] Brainyquote.com http://www.brainyquote.com/quotes/authors/m/miles_davis.html#ixzz1HZUb944J (accessed March 21, 2011).

[25] "It is important to note, however, that oftentimes silences are an important part of groups in African music, that a silence is not an absence of sound but an intentional placement of silence as a substitute for sound." Victor Kofi Agawu, *Representing African music: postcolonial notes, queries, positions*, (Routledge, New York, NY, 2003) 77.

[26] Jimi Hendrix learned music by listening and played with feeling which came from listening; he didn't have to learn how to read music. Neither did Ray Charles.

[27] Jurassic 5, "How We Get Along" from the album *Quality Control*.

[28] creativity. *Wikipedia*. http://en.wikipedia.org/wiki/Creativity#Creativity_and_intelligence (accessed March 23, 2011).

Creativity also breaks or meets musical expectations. Breaking expectations through the creative construction of musical forms is one characteristic of Beethoven's music, a defining feature that continues to engage listeners, new and old. Creativity inside classical performance recitals is perhaps less important than execution; however, meeting expectations through calculated creativity, like the creative use of original performance practice for Baroque music, can also engage listeners and enable a 'good' performance.

Creativity also addresses the interplay between musicians. The call-and-response musical form, along with improvisation, is one element that served as a vehicle for early jazz.[29] Call-and-response requires a musician to both listen and creatively respond. Since original ideas feed human engagement, inside music, original ideas can influence another musician to creatively proffer new ideas. Musician's interplay with the musical performance can in turn heighten the energy driving the music; yet, before a musician can be influenced he/she must listen. Interplay is initially driven by listening inside the silence.

Creativity is also a form of self-expression. In ballades by Chopin or rhapsodies by Liszt, these compositions suggest a highly improvisatory writing style. Both composers seemingly notated a natural flow of ideas, and their compositions parallel the natural flow of a Charlie Parker solo. I mention this type of creativity since all three of these men are noted for their great performances. Reviewing concert programs of Liszt, his programs included Original Fantasies, which the thematic material of the fantasy was to be chosen by the audience.[30] Not only was the audience asked to publicly participate and engage, but the use of new material for a performance displays a mastery of performance through creativity. Chopin, Liszt, and jazz musicians show mastery of their art through creative self-expression.

The creativity and improvisatory nature of a human performer adds to the performance.[31] The natural, impulsive creativity is more apparent during a live performance than listening to a recording (as I noted while describing the total experience), and can attribute to what keeps an audience captivated. Michael Jordan, referred to as one of the best basketball players of all time, performs with a highly creative approach. In dekes on offense, Jordan hides and fakes his next move, and throws off the defense because his move cannot be anticipated. He is able to score because of his improvisatory playing. Similarly in music, Coltrane or Parker are able to successfully communicate ideas through their high level of improvisatory playing. Miles Davis

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[29] Matthew Brennan, "Downbeats and Rolling Stones: An Historical Comparison of American Jazz and Rock Journalism," Ph.D. diss. University of Stirling, 2007, 46, 52.

[30] MUS 664. Music in the Romantic Era scanned program notes as part of class materials.

[31] James Nixon Curry, "Body Music: An Examination of the Physical and Mental Similarities of Sports Performance and String Music Performance," Ph.D. Diss. (Northwestern University, 2006).

said this about jazz performance, "The thing to judge in any jazz artist is, does the man project and does he have ideas." [32]

<center>(")Got to have the feeling!")</center>

James Brown is known to be the "hardest working man in show business" because of his live performances. *Live at the Apollo*, financed by Brown in 1962, demonstrates his and his band's ability to create a good performance.[33] Listening to this record again, I can hear all of the elements discussed –the impeccable timing, the unexpected musical breaks, the original flair, the interplay between Brown and his band, the high energy throughout the show. Taking all of these musical elements together –the execution, the silence, and the creativity of performing musicians– can help create what is referred to, by producers, engineers, A&R reps, musicians, and fans, as 'magical moments.'[34]

In discussing performance measures, I merely touched upon energy. **Energy** is the fourth performance measure, which is physically driven by the performer and psychologically perceived by the audience. While the translation of energy doesn't always translate to 'good' performance,[35] all 'good' performances contain a high perception of energy.
No element previously discussed can singularly produce the feeling of energy surrounding a performance, as energy requires a combination of the three elements: **execution**, **silence**, **creativity**. "Space does not impart order on the world and it is not constant and static. It is elastic and emergent, and it features different levels of intensity." [36] Energy is derived from a constant flux of material, and a performance has the ability to raise and lower apparent intensities. When all three elements mesh harmoniously inside a performance, the energy is more than palpable; one can 'feel' the energy inside the performance setting.

Up until now, I relied upon the predication that what defines 'good' is both subjective and objectively driven through collective agreement. Yet, to quote La Monte Young, "I am not interested in good; I am interested in new – even if this includes the possibility of its being evil." [37] How memorable performances are achieved in new performance types, especially technology-based instrumental performances where the notions of 'good' are not clearly defined or sought after, is both a question to objective 'good' performance measures and the concept that we cannot predict how *new* ideas will be perceived. By applying the above measures to

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[32] Brainyquote.com http://www.brainyquote.com/quotes/authors/m/miles_davis.html#ixzz1HZUus2Oq (accessed March 21, 2011).

[33] This album was ranked by Rolling Stone as 24th in the 500 greatest albums of all time in 2003. Mojo magazine, Allmusic, Rolling Stone, and countless other publications review this record with 5 of 5 stars.

[34] Film, "Tom Dowd & the Language of Music," 2003.

[35] which is perhaps why there are team awards given to the most improved player or the hardest working.

[36] Marianne Krogh Jensen, "Mapping Virtual Materiality," *Surroundings Surrounded*, ed. Peter Weibul, 305.

[37] Ina Blom, "Too Close to The Real," *Surroundings Surround*, ed. Peter Weibul, 104.

performance with technology-based instruments, these performances have the opportunity to deepen audience engagement, which will in turn assist any notion of the "new."

Now that computer music has been around for 50+ years[38], and the notion of real-time musical performance using technologies for the past 40+ years[39], we may begin to critically assess performances that use recent technologies. I am less concerned about the particular technologies used than discovering useful performance measures in performances that involve technology-based instruments.

From Kate Mondloch's essay arguing about the qualitative differences between the media screen and new media as deserving of its own "discrete critical framework," we can take technology-based instruments as a new media also deserving of its own critical framework.[40] Proposing an assessment based upon the spectatorship of performances that use technology-based instruments is important in discovering performance measures. Because technology-based instruments indeed involve human performer as part of the performance, we should argue for the same performance measures previously discussed. However, because there may not exist any preconceived notions of a technology-based instrument's function, capability, or musical associations, there must be additional measures with which to assess the success or failures of this type of performance.

These two additional measures are **establishing musical relationships**, and **articulating clear ideas**. Because many technology-based instruments do not have a performance history or repertoire, performances involving these instruments lack expectations about the musical execution, performance creativity, and expertise. In addition, there are no established conventions to follow, bend, or break. Establishing musical relationships is important to building a relationship between the music and the audience, especially since the audience may be encountering the technology and the performance type for the first time. By allowing the performance to establish relationships between the music, the listener, and the technology-based instrument, the audience subsequently has an 'in' to grasp the musical ideas present, and therefore, to engage the music on a deeper level.

Articulating clear ideas are important in music performances that involve technology-based instruments precisely because of the lack of conventions. The notion of articulating an idea crosses art disciplines. If no one can hear the idea expressed, the idea will become lost or misunderstood. If the audience cannot perceive the ideas articulated in a performance, the audience will lose interest. Lost interest equates to non-engagement, the opposite of what I

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[38] I am taking and Lejaren Hiller's *Illiac Suite* (1956) and Max Mathews's Music I (1957) as the beginnings of what we typically classify as 'computer music.'

[39] "Hornpipe"(1967) by Gordon Mumma is an early example of real-time musical performance that uses technology.

[40] Kate Mondloch, "Be Here (And There) Now: The Spatial Dynamics of Screen-Reliant Installation Art," from *Screens: Viewing Media Installation Art (Electronic Mediations)* (Univ. of Minn. Press, 2010).

defined makes a performance 'good.' Additionally, how can the audience assess what is 'good' if no notion of what defines 'good' exists in music that uses technology-based instruments?

One method for articulating a clear idea in a technology-based instrument performance is how the sound materials (timbres) are recorded and then mixed together. Since technology-based instruments have access to all recorded sound and the entire audio spectrum, it is important to mix these timbres together well. Engineering the source material for compositions is as important as the work itself, for the sounds influence how the work will be received. As recording engineer Jeff Thomas noted, "If you put in sound poop, you get out sound poop. You cannot make badly recorded material sound good." [41] Recording and mixing accounts for the various sounds present in the music, and allows these sounds to be heard as a cohesive whole. Communicating ideas in music is a result of good recording and mixing decisions.

<div align="center">(Real-time == Showtime)</div>

Technology-based instrument used in real-time musical performances present new challenges to performers and the audience alike. One challenge in real-time musical performance that use recent technologies stem from the additional preparation that goes into a performance. The electronic composer/performer must prepare for a real-time performance differently than that of a standard performer. Beyond the musical conditioning a performer prepares for, he must also work with the composer to understand the technology and/or performance interface.

Because recent technologies are not necessarily created with a real-time musical performance in mind, composers must employ programming to interconnect of software and systems together to serve the musical performance. While compositional and theoretical rules may be applied to compositions in spite of the performance, electronic works are tailored with digital software/hardware for the performance. As such, the composer must take into account all aspects of the performance in order to assist the performer. Removing unnecessary non-musical tasks and adding simple interface design elements serve the performer in focusing on the performance. Programming aids the electronic composer, and without confronting code or computer software, the electronic composer cannot write a real-time musical performance for recent technologies.

The breadth of topics/fields of study in electronic music require the composer to understand digital audio, programming, and the parameters of sound in addition to music in order to collect, modify, and map digital data for a musical performance. There is additional preparation that goes into writing a composition for real-time performance using recent technologies. He must work with the performer (even if the performer is himself!) and the technology to ensure that all the elements exist to set-up the possibility of a 'good' performance. Without this additional preparation and incumbent knowledge base, real-time musical

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[41] Jeff Thomas, "Digital Recording II", Lecture, Digital Arts Studio (Conservatory of Recording Arts and Sciences, Phoenix, AZ, March, 2006).

performances using technology will not succeed, even as newer technologies that help facilitate performance are introduced.

The other major challenge to real-time musical performance using recent technology is the dependency upon technology for the execution of the music. Technologies, like the computer, can fail at any given time, which can destroy a performance. Working a Jewel concert in 2002, I witnessed how a new digital technology running the sound reinforcement crashed mid-performance, killing the ability to project her performance throughout the large auditorium. While Jewel performed the rest of the concert on an acoustic guitar, less than a quarter of the audience could hear her, and the event drastically altered the audience's performance experience. This failure highlights the challenge of real-time musical performances that use recent technologies, and demonstrates that, void of an acoustic element, the show cannot go on if a technology fails.

Technology-based instrument used in real-time musical performances present new challenges but also afford opportunities to performers and the audience. There are three opportunities provided by recent technologies in the context of real-time musical performance. First, there is freedom for the real-time performance to be designed from the bottom up. There is opportunity in how new material is presented. Because recent technologies lack performance conventions, often the performance is shaped in conjunction with a technology. The lack of conventions enables new ways to showcase a performance and gives freedom to mold the technology to the performance. Technology enables new performance types.

Second, real-time music performances using recent technologies are not confined to specific timbres. The entire audio spectrum, any timbre, all of sampled sound is available during a performance. The limitless boundaries of available audio enable a performance to define the journey in new and creative ways. For instance, a solo performer can be the conductor, the soloist, and the orchestra all within a single performance. A performance is not limited by sound.

Third, new performance directions and recent technologies enable the creation of new experiences never witnessed before. "Technology now allows for a dynamic interplay between an artwork and the viewer that complicates and potentially deepens that relationship."[42]The potential deepening of audience experience validates real-time musical performances that involve recent technologies. Without real-time musical performances using technology as a viable, live-performance medium, traditional perceptions about live musical performance would persist, and no newly formed precedents could be established.

Through real-time musical performance, technology has the opportunity to challenge pre-existing notions of audience/performer roles. The past 150 years of recital performance history have established traditionally defined roles in the concert hall that dictate how performances are critically assessed. With new technologies that have little or no pre-established musical affects or

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[42] Colin Ives - ARTD 510 syllabus (Winter 2011).

repertoire, potential pitfalls exist within the context of a concert performance. Yet, opportunities exist for real-time musical performances using recent technologies to find homes outside of the concert hall. Performance art in the gallery and installation space have already challenged traditional audience/performance roles, and may provide alternatives for real-time music performances seeking new modes of assessment.[43]

Although what determines 'good' is ultimately subjective, an objective 'good' can be extracted, based upon the collective agreement about the attributes of 'good.' The useful measures I found that can be applied across performance types are **execution**, **silence**, **creativity**, **energy** (including **interplay**), and the total **experience**. Although all of the elements and measures I have outlined do not by themselves create a 'good' performance, all 'good' performances contain these elements. Practice, focus, and mental preparation enable the performer to stage a 'good' performance; yet, because these preparations are done prior to the performance they cannot be considered useful measures inside a performance. On the other hand, **audience engagement** through these measures helps shape the many subjective experiences and opinions on which the definition of a 'good' performance depends.

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[43] I refer specifically to the art of Allen Kaprow and the Fluxus art movement in the 1960s.

Appendix A

Measures or Rules of Audience Engagement*

1 **execution** (musical timing, pitch, dynamic articulation)
2 **silence** (listening, knowing what to play when)
3 **creativity** (improvisation, breaking expectations of musical forms, self-expression)
      2/3b **interplay** (between performers, the audience, and the music)
         created through listening and creative feedback, feeds the energy
4 **energy** (physically driven and psychologically perceived)
5 **total experience** (non-musical elements)
    removing elements allowing audience to focus on the performance
    adding elements that complement or supplement the performance

Additional Measures for
Real-Time Musical Performance involving Recent Technologies

6 **establishing musical relationships** (lack of performance conventions, audience needs
    an 'in' to the musical performance)
7 **articulating clear ideas** (good communication involves and engages listeners)

* (parentheses indicate how these rules relate to Musical Performance Types)