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The Bridge Project
An exploration of the use of technology in music and the scenic arts.

The temporal arts–music, dance, theater (we may include literature as well, for it is also temporal, especially when talking about lyrics in a song), they all share a common spine as it were, without the which no artwork could be realized and which may be thought of as having two sides–the front: *time*; the back: *the poetic image*. The ultimate vision behind a work of art may be of a timeless nature, but the way that performer and audience can experience this vision together is through time.

Centered in music but with an eye towards the scenic arts (theater and dance), this essay is concerned with *how* we use technology (throughout this paper, I will use this term generally to refer to computer technology) to make sounds in relationship with time–with pace, and rhythm, with a focus on the instruments we may create to produce these sounds, their makeup and behaviour (practical issues of performance won't be dealt with in this bit of writing, but hopefully in a second paper or chapter). Before I elaborate on this *how*, let me digress with a couple of brief quotes:

> Quote No. 1: Judi Dench's 10 Rules for Playing Shakespeare: [1]

[1] Wells, Stanley. *The Routledge Companion to Actors' Shakespeare*. New York: Routledge, 2012. Print and Online.

“1. Remember it's a play, not reality.

2. Obey the meter.

3. Start scenes.

4. Earn a pause.

5. Don't separate.

6. Drive through the speech.

7. Antithesis pauses, up at the ends of lines.

8. Economy, simplicity, and negotiate with humor.

9. You don't have to carry the message; the play does it for you.

10. Trust the play and your casting.”

Quote No. 2 – Part 1: G.K. Chesterton on logic: [2]

“You can only find truth with logic if you have already found truth without it.”

Quote No. 2 – Part 2: Chesterton on the nature of reality: [3]

“The real trouble with this world of ours is not that it is an unreasonable world, nor even that it is a reasonable one. The commonest kind of trouble is that it is nearly reasonable, but not quite. Life is not an illogicality; yet it is a trap for logicians. It looks just a little more mathematical and regular than it is; its exactitude is obvious, but its inexactitude is hidden; its wildness lies in wait. I give one coarse instance of what I mean. Suppose some mathematical creature from the moon were to reckon

[2] Chesterton, Gilbert Keith. *The Collected Works of G. K. Chesterton, Vol. 27: The Illustrated London News, 1905-1907*. San Francisco: Ignatius, 1986. Print.
[3] Chesterton, Gilbert Keith. *Orthodoxy*. Louisville: GLH Publishing, 2016. Print.

> up the human body; he would at once see that the essential thing about it was that it was duplicate. A man is two men, he on the right exactly resembling him on the left. Having noted that there was an arm on the right and one on the left, a leg on the right and one on the left, he might go further and still find on each side the same number of fingers, the same number of toes, twin eyes, twin ears, twin nostrils, and even twin lobes of the brain. At last he would take it as a law; and then, where he found a heart on one side, would deduce that there was another heart on the other. And just then, where he most felt he was right, he would be wrong."

If I may continue with these digressions for a little bit longer, let me note that on the first quote, six out of the ten rules are about the management of, or rather about the relationship between the performer and *time*. The second quote deals with a number of ideas: the limited nature of logic (let us also remember here that we may think of logic as a founding principle behind computer design); the mysteries behind nature and the challenges of apprehending reality (the "inexactitude" of having only "a heart on one side"); and about one ingredient necessary for any attempt at illumination: again, *time* (life's "wildness lies in wait").

Going back now to the use of technology to make music and art, an argument could be made that we have let it influence, and perhaps limit our creative process (not in the sense of capping it necessarily, but rather channeling it), forcing us to adapt to the computer's inherent makeup (there's no intention here to put a value judgement on this

observation–just yet–much art and music has been created with computers and much of it rather new and innovative). Computers are just machines, with a basic logical structure (they turn switches on or off). Yes, we can afford nowadays to generate and manipulate complicated rows of 1's and 0's. For example, we could replicate the subtlest variations of shade in a photograph, with millions and millions of pixels per inch of image. That is to say, computers now have a great potential to represent a great deal of nuance. But, as far as digital music is concerned (and in a rather crude generalization), one could say it has been subject to the following tendencies–whatever the style or manner of production:

- To be quantized to some predictable and all too regular measure of time.
- To be programmed, and what I mean by this is that sounds or performances have to be prepared somehow, whether they are played live or merely programmed; at one point or another, one must stop and tinker with the computer to get *just the right volume*, or *just the right transition*, or for a note or sequence to play *just right* (and even when these sequences are set to play out random events, they must be prepared beforehand somehow).
- If it is produced live, to be (almost, if not truly) one-dimensional. Synthesizers usually have multiple parameters that can change various aspects of a sound, but when affected in real time, these parameters tend to be changed discretely. For example: a filter sweep on an oscillator; a tremolo effect applied to only one aspect of the signal; volume, pitch, etc.–all these tend to change independently of each other, but not in an interrelated way. This problem is currently being addressed by

designers. Nowadays hardware controllers are finally bearing more subtle levels of complexity (for example, ROLI's *five dimensions of sound* in their Seaboard and Light Block instruments), so, much progress is being accomplished; designers have also been able to combine a great variety of sounds and in very creative ways. However, this one-dimensional tendency has remained strong.

A violin may also be considered a kind of machine. It's a box with resonant holes and strings attached outside it; and a bow. It also follows certain tendencies:

- If it's played by a child, it tends to utter quite drastic, or extreme tonal changes (perhaps to and fro everything *but* tone!); if played by a mature musician, it can sing sweet tones with the most subtle timbral changes.
- In general, it may be said to have particular kinds of behavior, depending of how it is played. For example: if one plays near the bridge, the tone will be brighter, harsher; the amount of pressure on the bow can create a range of sounds, from almost percussive noises to very smooth, soft tones; the closer the finger stops are to the bridge, the higher the pitch, and vice-versa; if one were to slide the left hand from one extreme of the fingerboard to the other, one may hear siren-like sounds, very subtle movements with the fingers, on the other hand, will produce an almost human vibrato.
- It is *not* a logical machine: it offers instead a complex mechanical/acoustic makeup: its beauty lies in the fact that a player may combine multiple behaviors at once and

in multiple ways, which bare a psycho-acoustic relationship: it is naturally a *multi-dimensional* musical instrument.

Given these few (and rather gross) bullet points on the nature of each, let us attempt to symmetrically juxtapose them–acoustic vs. digital instruments:

	Virtues	Limitations
Acoustic Instruments	- Its performance is spontaneous. - At anyone time, the sound coming out is prone to many changes at once (in volume, brightness, attack, vibrato, etc.).	- A violin will always sound like a violin (however wildly one plays it): it will not sound like a guitar, or a djembe, or a cooking pot. - They are old: their sound can be perhaps all too familiar.
Computer-based instruments	- In a split second, a computer may change timbres wildly, from the high pitch of a violin sample, to the low pitch of a piano, to a variety of waveforms in a wavetable oscillator. - They're in comparison quite new and offer variety, and a great potential for growth.	- Its performance tends to be pre-meditated. - Each sound that gets fabricated (as wild as it may be), tends to be one-dimensional in nature.

Why the title then, *The Bridge Project*?

I would like to develop a series of experiments, compositions, collaborations, etc., to accompany this essay–or proposal of sorts–and thus create a kind of *practical aesthetics* about this topic, bringing together:

- The theory behind what's possible with computers (in terms of music making) and the practical (and poetical) needs of creators (i.e. directors, choreographers, composers).
- The best features of both, computer-generated instruments and acoustic instruments, in one modern platform: the freedom of playing a live instrument vs. the intricate diversity offered by technology.
- The pre-meditated nature of technology-driven music design and the real-time nature of live performance.
- Whether it is the enchanting polyrhythms played by a classical kora player, or the hallucinatory orchestrations of say Debussy's *La Mer*, they both are very succesful at transforming the mechanics of music making into a poetic image: it would be a great achievement if computer music could achieve the same level of fluidity and virtuosity! That is to say, to bring together novelty and tradition, and in passing, to bring together the 'dead' logic of computers and the super-logic of art's poetry–so that they may be considered a valid tool for expressing *living* ideas (this may call for an argument about the use of technology in sound sculptures and installations,

for they are poetic just as well–my case is only focused on the performative and temporal nature of music).

- To liberate the modern performer from the technology-driven concerns (in the context of a rehearsal or performance), so that she or he may address the immediate concerns of the artwork to be performed: they should be able to afford the freedom, just like Judy Dench, to be concerned with that much-sought-after discovery of the present moment, when she has given a "superb" performance and felt she was able to faithfully follow her "10 rules;" one should be able to allow the passing of time to drive the musical impulses, so that the modern performer may just as well be able to enter into a trance, so to speak, as he or she makes that aforementioned poetic image manifest.

Following then, are various experiments, or musical studies, that I would like to put into practice to try out these ideas. With a special computer-designed instrument, capable of playing a variety of textures and with an accompanying control surface interface, wherein I would have built (or programmed) special "keys" which would each play a different sound (from diverse sources, and with their own pitch and timbre) and through which one would also be able to "touch" or manipulate these textures in a number of ways (e.g. volume, harmonic variations, looping and temporal effects, etc.), I would like to explore the idea of being able to play as freely and complexly as a violinist would play with his or her bow and strings. This so-called freedom that I am looking for in computer music is twofold:

Leg 1 · *The Front*: Free Time

I would like to have: a) the diversity of computer-generated sounds available at my fingertips, and b) the ability to play them at will, so as to be able to follow another performer (e.g. an opera singer in a recitative, an actor reciting a monologue, a dancer improvising), as he or she gestures any group of phrases in a *non-constrained* rhythm–*ad libitum*.

Besides the free use of time, I also like the *thought* of a digital piece of music or sound design merely following a dancer or an actor (or even a musician)–that is to say, unfolding, or evolving *along with* them–rather than the other way around. Typically, the latter is the case, in the world of digital music: contemporary dancers moving precisely to a carefully constructed sound recording; actors waiting for a sound cue before uttering their next thought; drummers playing to a click track synchronized to a sequence of synthesized sounds.

Leg 2 · *The Back*: Painting with Sound

John Cage said in his book *Silence*: [4] "I believe that the use of noise wherever we are, what we hear is mostly noise. When we ignore it, it disturbs us. When we listen to it, we find it

[4] Cage, John. *Silence: Lectures and Writings*. Middleton, CT: Wesleyan University Press, 1973. Print.

fascinating. The sound of a truck at fifty miles per hour. Static between the stations. Rain. We want to capture and control these sounds, to use them not as sound effects but as musical instruments. Every film studio has a library of "sound effects" recorded on film. With a film phonograph it is now possible to control the amplitude and frequency of any one of these sounds and to give to it rhythms within or beyond the reach of the imagination. Given four film phonographs, we can compose and perform a quartet for explosive motor, wind, heartbeat, and landslide...If this word 'music' is sacred and reserved for eighteenth- and nineteenth-century instruments, we can substitute a more meaningful term: organization of sound."

I would like to have every stroke on an iPad–or some other surface controller–be able to "paint" images with sound, perhaps in antipodal fashion to Mr. Cage's description–one may assume that in his latter example of a "quartet for explosive motor, wind, heartbeat, and landslide" that he was rather concerned with their sound for the sake of sound itself. Now, if the behaviour of soundwaves were to be taken much like reflected color, that their scope is given by the range of change in frequency and amplitude, one may perhaps think of sound in visual terms: for example, the purity of a sine wave played by the Ondes Martenot or a Theremin could represent the various shades of electric purple in a James Turrell installation; the sound of a slow analog synthesizer passing through some subtle distortion could be taken as a thick brushstroke in a Gerhard Richter painting; some noisy recording could act as a 'sound object' and in turn represent a found object in one of Robert Rauschenberg's *Combines*.

But it's not *just* about Rauschenberg and Cage: I would like this instrument to be capable of a whole range of performances: from playing traditional harmonies with simple sounds à la *Switched-on-Bach*, to partaking in any number of experimental contemporary noise works; for example, to be an element in a Pauline Oliveiros *sound-mandala*, or to mimic the sound of a noise-guitar (as played by, say Arto Lindsay!). The sounds are sculpted *a priori*, as the player wishes them to exist, and then they're programmed to be made malleable through the use of a control surface interface (which would allow the sound to change in various ways–volume, timbre variations, etc.).

Leg 3 · Example Demos

Taken into consideration the previous two "legs," I would like to construct specific demos for the purpose:

- A prepared piano of sorts (in honor of Mr. Cage).
- Why not: to actually build a 'phonograph quartet' for 'explosive motor, wind, heartbeat, and landslide'!
- To create an electronic accompaniment to a lyrical song. For example, John Dowland's *Flow My Tears*, replacing the lute as it were, but so that the free-form kind of singing–typically found in such types of song–may be followed.
- To grab a video of a contemporary choreography, say anything by Pina Bausch or Anne Teresa de Keersmaeker or the Merce Cunningham Dance Company, to name

a few exampels, and to create an electronic soundtrack that creates a complementing poetic image with sound and that the sound may follow each gesture with a 'sound stroke.'

- To accompany a Shakespeare monologue with a texture soundtrack.
- To create a live sound design/sountrack of sorts that would score a sequence in some already established film, perhaps which was driven by music originally, and which either portends a climactic realization or provides for some kind of reflective mood. The reason for using an already-made film is so that I be allowed to be more specific with the music–poetically speaking–with that particular sequence (a film that comes to mind is *The Limits of Control* by Jim Jarmuch).

What is the purpose behind this project?

There must be a reason why I've been drawn to these various fields: music, technology, a stage filled with bodies moving (at once searching and in catharsis), poetry and theater. I would like to find out what their common thread is. There are certain kinds of minds that can find an infinite world of interest in *one* activity alone, like Glenn Gould and his piano (and his Bach). Then, there are other minds that find fascination in *every* area of life that they're confronted with, like a Leonardo Da Vinci. Of course, I wouldn't dare to claim neither genius nor renaissance, but like a puppy turning its head in every which direction responding to stimuli, I've found myself chasing after those various fields I mentioned. It must be something about the creative image and *poiesis*, to be able to translate an idea

(any of those abstractions, which are so hard or impossible to speak of, but which are so inherently human, like *freedom* or *love* or *solace*) by 'painting' it with movement and sound. The pivot point here, I think, is technology, for dance has had an affair with music for most of its existence, and theater and poetry have been accompanied by, or *made of* music just as well. In terms of technology, we could say that we have used our bodies to move, our voices to speak or sing, and strings and bows and wood and animal skin to express ourselves beyond what we naturally have in us: but give a loving carpenter a new carving tool, and they will turn all but giddy and childish and miss supper: to think about, to tinker with, and to develop technology means to explore new and subtle forms of expression. It's part of our search for what it is we want to say back to nature. Like the mechanicals in *A Midsummer Night's Dream*, we must "come in with a bush of thorns and a lantern...and a wall"! For those of us who lack the genius to be self-sufficient (though even Beethoven, who lost his hearing, perhaps he didn't need his pen, but boy haven't we been privileged that he used it, and isn't he a real friend!), we hang by two ropes: a developed mind and heart on the one hand, in order to bring some kind of insight into this world; and some tool on the other, so we can make the former manifest. The malleability that sounds can afford in a digital medium mean not necessarily the precision of a fine-point pen or the wash of a watercolor, but rather something in between, or the ability to go from one to the other in one gesture. Language and all these tools, we might always find that they're limited, but as a Leonard Cohen song goes, "there is a crack in everything/that's how the light gets in." This search is just about that: finding that crack.

But there's yet another purpose. Let me indulge with one last quote, this time from the character of Miranda Priestly in the film *The Devil Wears Prada:*

> "This...Stuff"? Oh. Okay. I see. You think this has nothing to do with you. You go to your closet and you select, I don't know that lumpy blue sweater, for instance because you are trying to tell the world that you take yourself too seriously to care about what you put on your back. But what you don't know is that that sweater is not just blue, its not turquoise. It's not lapis. Its actually cerulean. And you're also blithely unaware of the fact that in 2002, Oscar de la Renta did a collection of cerulean gowns. And then I think it was Yves Saint Laurent – wasn't it who showed cerulean military jackets? And then cerulean quickly showed up in the collections of eight different designers. And then it, uh, filtered down through the department stores and then trickled on down into some tragic Casual Corner where you, no doubt, fished it out of some clearance bin. However, that blue represents millions of dollars and countless jobs and its sort of comical how you think that you've made a choice that exempts you from the fashion industry when, in fact you're wearing a sweater that was selected for you by the people in this room from a pile of stuff.

The parallel I would like to make is an aesthetic one, but not aimed at the industry (e.g. how the media influences which artist ends up, say on the top banner of iTunes), but at how we use our beloved technology nowadays to make and produce music. For all its

advances it has bestowed on us, technology in general has had a crippling influence. It has made us into lazy acquiecent comsumers. It's so much easier to click on a 'like' or an emoticon, or let someone know their words were found agreeable, joyful, funny, inspiring, etc. by just typing three letters with our thumbs: 'lol.' Something similar happens with those of us musicians and those of us consumers of this music: it's so much easier to let the computer manage the rhythmic placement of our musical ideas, or to let that snappy bass drum stay the same, not just throughout a song, but across many styles of music. One may argue that there has been a plethora of creativity (as far as electronic music is concerned) spanning from Varése to Stockhausen and onwards, and then on to popular music, say Berlin's most elite minimal techno, or bands like Radiohead, who have challenged Rock music's status quo–they're all, from the erudite to the popular, great and edifying points of reference. But the *tendency* is the *same* beat behind every hip-hop song or Raggaeton hit, the *same* thumping sound effect on every Hollywood movie trailer. That's what the mainstream across the globe receives: not the variety and insight we pretend to proclaim. I don't mean to tell people what to listen to, we are all free to follow our interests as we see fit. But, as an artist and educator who uses technology, I find myself responsible to not let the practice turn reductive–lest the unaware public be informed of one too few a choice, to miss the challenging stuff. We must rescue all the nuance and depth and intelligence that our predecessors have endowed us with through so much labor and dedication, and not fall short, but build on that legacy. Innovation, and tradition, they need each other, and we need them both. We must be able to cut through

all the technological clutter and find what's actually useful from it, while not forgetting the depth of the human purpose in art.