

David J. Simons

written for Lisa Karrer's multi media performance piece about Charles Darwin,
"Schismism: Natural Law"

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On Music and Evolution

We can analyze music in terms of its content and structure. Can we take an existing musical structure or form, and fill it with unrecognizable auditory material? One of the main streams of thought in structuralism, and in particular Claude Levi-Strauss, is that even as things change, the structure remains the same. The eternal myths and archetypes of humanity take many guises, but they ultimately speak to the culture at a time and in a language it can understand.

In the classical era, a Sonata-Allegro or Prelude, or Symphony, has a definite form that is the vehicle for the music. In modern times there is the 12 bar blues; the pop song intro-verse-bridge-chorus-verse; the jazz form of head (melody) - improv - trade 4's - head- outro; and many more musical forms of many different cultures. These are all structures, like genetic material that is passed down through the ages. But species adapt to changing environments (or perish). Other ways of becoming extinct are catastrophic or sudden drastic environmental changes. In Art the reasons for extinction might be lack of proper archival documentation, and destructive social/political regimes, engaging in censorship and cultural/racial genocide. As with biological life forms, musical styles adapt, renew, mutate, and evolve. It is through this broadening and specializing of forms, methods and materials that our musical culture continues to grow. In great contrast to this is a "Darwinian marketplace" aspect to music: if it doesn't sell, it deserves to die. But that's just the commercial entertainment world. As Adorno writes in his essay *The Culture Industry: Enlightenment as Mass Deception*,

"Amusement itself becomes an ideal, taking the place of the higher values it eradicates from the masses by repeating them in an even more stereotyped form than the advertising slogans paid for by private interests"

-Theodor Adorno and Max Horkheimer, *Dialectic of Enlightenment*, Stanford University Press, 2002/1969 (p.115)

Schismism: Natural Law has a non-linear structure (audience members choose the sequence of events in each performance) and yet always contains the same material, just in a different order.

If genomes give us our blueprint for individuation and development as a species, the cultural equivalent to *genes* is what Richard Dawkins called *memes*.

"Memes are habits, skills, songs, stories, or any other kind of information that is copied from person to person. Memes, like genes, are replicators. That is, they are information that is copied with variation and selection."

- Susan Blackmore <<http://www.susanblackmore.co.uk/memetics/about%20memes.htm>>

(Also see her TED Talk http://www.ted.com/talks/susan_blackmore_on_memes_and_temes.html)

Blackmore's technological equivalent to memes is *temes* - digital replication and selection of information. Song playlists for your iPod or personal digital music player can now be generated automatically based on your past preferences, buying patterns, and, in a fascinating (or frightening) new hybridization, interactively with your physiological state. Heart rate, blood pressure, skin temperature, etc. will determine your playlist <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.87.5924&rep=rep1&type=pdf>>.

Here are some excerpts by the great composer Edgar Varese (1883- 1965), from his 1939 manifesto *The Liberation of Sound* :

"The raw material of music is sound. That is what the "reverent approach" has made most people forget - even composers. Today, when science is equipped to help the composer realize what was never before possible - all that Beethoven dreamed, all that Berlioz gropingly imagined possible - the composer continues to be obsessed by the traditions that are nothing but the limitations of his predecessors. Composers, like everyone else today, are delighted to use the many gadgets continually put on the market for our daily comfort. But when they hear sounds that no violins, no woodwind or percussion instruments of the orchestra can produce, it does not occur to them to demand those sounds of science. Yet science is even now equipped to give them everything they may require."

Varese was lamenting the slow progress of musical evolution in relation to the advances of science. In speaking about Form, he wrote:

"No matter how original, how different a composer may seem, he has only grafted a little bit of himself on the old plant. But this he should be allowed to do without being accused of wanting to kill the plant. He only wants to produce a new flower. It does not matter if at first it seems to some people more like a cactus than a rose."

Varese then goes on to compare new musical structures with crystal formation:

"The crystal is characterized by both a definite external form and a definite internal structure. The internal structure is based on the unit of crystal which is the smallest grouping of the atoms that has the order and composition of the substance. The extension of the unit into space forms the whole crystal. But in spite of the relatively limited variety of internal structures, the external forms of crystals are limitless."

For more and complete Varese essays:

<<http://helios.hampshire.edu/~hacu123/papers/varese.html>>

Another great composer, and liberator of music from structural confines is John Cage (1912-1992). He is addressing the need for music to evolve by process, performance as open ended (non-predictable) process, so you are not replicating a structure or content from the past. Here is an interview excerpt from 1990:

JC: I think of a structure as something having parts and I think of a process as something not having parts. You could now have something not having parts that nevertheless begins and ends. The thing I think of as being something I used to avoid, and which I no longer do, is something like harmony. Now it seems to me that harmony happens no matter what we do. It's like melody; if you make a number of sounds you automatically have melody, and now if you have several sounds together they automatically produce harmony. Most of my life I thought that I had to find an

alternative to harmony, but the harmony I was thinking about was the one that had been taught at school. Now I see that everything outside of school is also harmonious.

P: A wider definition of harmony?

JC: A changed definition of harmony; one that doesn't involve any rules or laws. You might call it an anarchic harmony. Just sounds being together.

pataphysics, blue issue, 20 january 1990 <<http://ronsen.org/cagelinks.html#writings>>

In considering evolution in music we traverse a path from Varese seeking new tools to define a new music, to Cage seeking new definitions of harmony and alternatives to structure, and coming up to James Tenney on how we hear. This is crucial because perception is highly subjective: genetic as well as culturally inherited. We can train ourselves to listen for certain elements, just as we learn to ignore others. There is a poetic phenomenon (or pathology) I call *Prismatic Hearing* (CD of compositions by David Simons on *Tzadik*). The ear, and then the brain and the mind, separates the sounds we hear into their component parts, then re-assembles the phrases unconsciously, according to personal priorities. As music evolves, our tools for understanding it have to change. Composer James Tenney advances a theory of "hierarchical perceptual gestalt formation" and psychology of hearing in his essays called "META HODOS" that enables the listener to approach the new musical materials in a new way.

This interview by Frank J Oteri with James Tenney (1934-2006) is from June 1, 2005 :

JT: When it comes to microtonality, well, any kind of music, I don't see how we can avoid considering how people hear. With respect to tuning, I think one of my contributions to the field is the concept of tolerance. I call it tolerance, just like an industrial laboratory would talk about tolerances in the diameters of bolts or something...But it's more than just a recognition of human frailty; it's a recognition that within a certain tolerance range, we are going to interpret an interval. My hypothesis is that our auditory systems (and this is not a conscious thing) interpret an interval as meaning harmonically the simplest ratio interval within the tolerance range of what's actually being sounded. So if you're within 5 cents of a 5:4, you're going to hear 5:4. That's what the meaning is going to be . . . Think dominant seventh chords; imagine that the tempered minor seventh is being understood as a 7:4 in relation to the root. Our tolerance range is a third of a semitone.

FJO: You said the emotion of the creator sometimes gets in the way of the work.

JT: I've been deeply influenced by Cage's attitude about that. The focus should be on the sound itself and not on the ideas and emotions of the composer. What this guy or that other person thinks or feels is not that interesting. Cage said it's no more important than if we go out to dinner whether you're going to have chicken or beef. You know, big deal.

< <http://www.newmusicbox.org/article.nmbx?id=4245> >

The structure (of his dinner) is the same, it's just the content that changes.

In 1920 the first viable electronic musical instrument was created, and named after its inventor, Theremin. But the music that was played on this instrument for a long time was classical, romantic, melodic, filmic. It took decades and major evolutions of musical thought to create new forms of music with the new tools of electronics.

The unfolding of Lisa Karrer's *Schismism*, which is itself a piece about evolution, is a series of chapters comprised of live performance, film and audio montage. In the early Russian filmmaker and theorist Sergei Eisenstein's sense, tonal and rhythmic, vertical as well as intellectual montage is related directly to and inspired by musical forms and practices. If a musical score could have themes, counter themes, variations, and contrapuntal lines all being developed simultaneously towards a harmonic outcome or resolution, or at least a climactic resolve, then why not have multiple threads of filmic images, each progressing towards it's conclusion, but each informing the other, by connection, of a totality of meaning? In intellectual montage the juxtaposition of images creates a new meaning; in vertical montage we have polyphonic trajectories. The collision of different images generates a dialectic and creates symbolic meaning - comprehended as not next to each other in time and space, but stacked up on top of the other in layered relation. In this way the evolution of our understanding is heightened by our seeing Darwin the man, and his family and the context of his great breakthroughs – the personal as well as scientific process.

David Simons <<http://simons-karrer.com/ArtistStatement.html>>

Lisa Karrer <<http://simons-karrer.com/Lisa-bio.html>>