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The Survival of the Fittest vs. the Wisest: The Future of Electro-Acoustic Music

In order to continue reading this paper any further beyond the first paragraph one has to agree on two basic premises: a) to be interested in widening the audiences of the electro-acoustic music beyond those people who are directly related to the field; b) and also wish to use music as an art form which communicates information among people with shared common experiences. Now, if you accept these two statements you may proceed with interest--otherwise you will probably disagree with most of the following text.

What can we learn from Darwin that may be used in electro-acoustic music? Intelligence and a culture are corequisites. What makes the primary difference between our species and all others is our reliance on cultural transmission of information, and hence on cultural evolution. Animals do interchange information but in a biological rather than a cultural context. Bird mating calls certainly fall under the category of sonically transmitted information which is specific to a given species, but those species have limited intelligence and undoubtedly no bird culture. This does not mean that animals have no minds, it simply means that *by human standards* those "primitive" minds produce no cultural history.

Dawkins' meme has a peculiar but powerful role to play in our understanding of human culture. This is the way he defines it:

Examples of memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene pool by leaping from body to body via sperm or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via process which, in the broadest sense, can be called imitation. If a scientist hears, or reads about, a good idea, he passes it on to his colleagues and students. He mentions it in his articles and his lectures. If the idea catches on, it can be said to propagate itself, spreading from brain to brain.
[Dawkins 1976]

The important rule for memes, as for genes, is that they must constantly replicate. This replication is a mindless process not necessarily for the good of anything; replicators that are good at replicating flourish--for whatever reason. Meme X spread among the people because X is a good replicator. [Dennett 1995]

Let's take a moment and look at the case of one particular meme--the success of a four-note meme at the beginning of Beethoven's Fifth Symphony. It certainly has much less to do with the absolute value of its pitch-set "internal" design, i.e. the way a musical piece is compositionally structured, and much more to do with the design this meme presents to the world, its phenotype, the way it affects the minds and other memes in a particular socio-cultural environment.

It is very logical to assume that humans intelligently create musical pieces (potential memes) rather than producing them as random innovations. But, looking at the state of affairs in electro-acoustic music, one sees more examples of innovations than creations. Let me clarify the distinction. Quality of electro-acoustic music, and for that matter the quality of anything, does not depend exclusively on its structural organization, but rather it is rooted in the transaction that occurs between the music and the audience. To evaluate music is to find the quality of transaction between the musical configuration and its cultural response. If that response is positive, meaning ecologically prudent for the given cultural environment, then it may be called creation. On the other hand, an innovation which is just randomly new and not holistically related to the environment will certainly produce a negative cultural response.

In order to expand the audiences for electro-acoustic music it is necessary to look at the minds of the people who constitute those audiences. Why in the minds? Because the minds are the habitats of the memes. Minds are in limited supply, and each mind has only a limited capacity for the support of memes;

therefore, there is considerable “competition” among memes for entry into as many minds as possible. This competition is the major selective force in the infosphere, just as it is in the biosphere.

One way to look at music is through the memetic competition among musical compositions for admission into the minds of the audiences. Randomly presenting new musical pieces (potential memes) to these minds can be compared to playing by the rule of evolutionary biology known as *the survival of the fittest*. It is well known that this game is ruthless and will in its process discard the vast majority of its participants. Being the only intelligent species on this planet, it is certainly wise not to play by the rules of the very game that created us, because if we do so, we may easily become a casualty of the same mindless evolutionary process. For that reason, it would be preferable to turn this game around to our advantage, redefining it slightly, and calling it *the survival of the wisest*. Since humans have the brain that is capable of intelligent thinking, it would be a tremendous waste not to use it in determining our own future, and the future of our music. How can this be achieved?

Wrestling with this problem may appear to be an insurmountable task, but the situation is not that hopeless albeit. For the sake of clarity, let us imagine continuation of our inquiry as an academic course in music composition. In this case, instead of teaching our students the elements of compositional structure such as counterpoint, harmony, orchestration, etc., we teach them the basics of understanding the sonic entities which human minds demonstrate interest when listening. After the completion of such a course in music composition our students would then be ready to learn the elements of musical structure that may represent the best tools in achieving our intended goal. In other words, how would students use musical structure in order to compose pieces which will seem interesting to the musically inclined human minds of our audiences. As a consequence of this process, the successful musical pieces will become the memes residing inside the human minds. Once situated there, the memes will have a chance to replicate, which is their sole function.

It is dangerous to make generalizations, but I am going to offer the following anyway.

Nobody cross-culturally educated would agree any more that music represents a universal language. However, research tangibly shows that there are some things which appear universally. In order to make sense from the vast sonic events that enter its auditory cortex, the brain had to become a master of simplification. This process is nothing like filtering unwanted information, because such a mechanism would be tremendously complicated and utterly inefficient. In actuality the brain searches for familiar devices and patterns. [Jourdain, 1997] To create a musical pattern in the human brain,, it is necessary to have repetition of the sonic event in question, thus it can be remembered and used in the future. Composing a piece of music (a latent meme) which appeals to the minds of the audiences outside the narrow and highly specialized electro-acoustic music niche requires the existence of some sort of a **clearly recognizable** musical reference. If there is a single negative point about the avant-garde approaches in music, then it is the lack of reference and use of discontinuity and disjunctness without any historical or compositional reflexivity. Human beings, in large part, will not find appealing anything which produces one unconnected innovation after another, never going back and reevaluating what has gone before in relation to what is going on now. Let me use an example to illustrate this point.

Digital sound sampling and computer technology of the nineties readily allow electro-acoustic music composers to manipulate and transform organic sounds through myriad methods and possibilities. This technological might inevitably render countless numbers of musical compositions which deal with so-called sound exploration. Unfortunately, most of these pieces remain just that--sound explorations--and never present themselves as memes with faculty to catch on to the audiences. Why is this so? Most of these pieces suffer from a syndrome which may be called “no point of reference.” What I mean is that if one is to make an electro-acoustic music composition which deals, say, with sonic transformation of the sound of a baby crying, one may consider it interesting to do the following. First, it would be wise to ensure that the audience listening to such a piece can clearly discern where this sonic manipulation is coming from, and be able to hear and refer to from time to time to the original sound source. Second, throughout the piece the audience should be

reasonably prepared for the direction these manipulations may take. The human brain perceives by anticipation. It formulates perceptual hypotheses and then confirms them. [Jourdain, 1997]

When the brain receives sequences of musical sounds, it follows a similar process as in dealing with other patterns: it attempts to “interpret” them by using the information stored in its long-term memory about previous, similar experiences. This information may allow some aspects of a future signal to be anticipated, as happens when we hear the first line of a familiar song. This ability to extrapolate forwards on the basis of past experience is one form of that ability that we call “intelligence”; it can dramatically enhance an organism’s chances of survival. Since humans constantly judge by comparison, and our judgment of any item depends upon what we are comparing it to at that moment, let’s be wise and use this knowledge in composing music. If there is a point or pattern that reflexively recurs throughout the musical composition, it will create its memory in the brain and thus become a point of reference to which future transformations of the same pattern may be compared. If humans are able to compare then in return, they will be also able to evaluate. If this evaluation process continues, in all probability it means there is a growing interest in what is going on. This ongoing evaluative process does not ensure that a musical composition containing recurring patterns and their transformations will be a guaranteed recipe for the creation of a successful meme. It simply means that unless there is a point of reference, which may be just about anything recognizable to the ear-minds of the audience, there is a significantly less chance for the produced meme to catch on and become a good replicator. How successfully one plays with musical patterns will, in the end, remain a matter of musical talent.

It very important to understand that it is no accident that the music memes which replicate tend to be good for humans--not for reasons of our *biological* fitness, but for whatever it is that we hold dear. This is an unsettling observation for a person, who believes in absolutes. However, the situation should not be viewed as totally desperate. Let me again put everything in electro-acoustic music terms. It is amazingly fascinating to see what Csound,

Cmix, Kyma, Sound Designer, Sound Hack, and Lemur can do to sound samples, as well as what MAX can do to musical structure when applied to fractals, neural nets, fibonacci numbers, solar systems, palindromes, permutations, interpolations, pitch-sets, and population growth algorithms. It is crucial to make sure that those fascinations that we hold dear, do not remain the exclusive property of the composers who indulge themselves in playing with their technological marvels. It is extremely important that the audience also get to share some of our unique thrill. There must be some significant overlap between what the composer holds dear and what the audience holds dear.

This is a very demanding and difficult task to put into reality, but if it is not done soon, the electro-acoustic music memes are not going to find their habitats and replicate themselves any further beyond the narrow, technically-oriented facilitators. Unless established compositional approaches are changed, the question will still remain: Do we compose only for our idiosyncratic selves or for the audiences of our culture?.

On the other side of this argument Charles Rosen claims that survival of any music is independent of the audience’s response.

The music that survives is the music that musicians want to play. They perform it until it finds an audience. Sometimes it is only a small audience, as it is in the case so far for Arnold Schoenberg (and I am not sure if it will ever be a large one), but he will be performed as long as there are musicians who insist on playing him. [Rosen 1998]

As much as I personally disagree with Rosen’s basic assumptions about survival of the music, I can pretend for a moment that Rosen is right having the following question rise: Who are the performers of the computer music? The answer: Computer music composers themselves. The only computer music composer that I came across who publicly performs other composer’s computer music is Neil Rolnick. And here we arrive again at the inescapable conclusion that we are playing our music for ourselves.

Isn’t it obvious that it is not feasible to continue clinging to the notion that music is exclusively a form of personal self-expression

through which the composer produces a piece of music without regard to the response from its socio-cultural environment. Paradoxical notion of releasing musical memes in front of an audience and saying, “I did not write my music for you at all, but I want you to listen to it anyway” makes little sense. Evolution works on the same principle--the survival of the fittest--in which case 99.99% of the answers to the question raised above is certainly going to be “LEAVE IT!!!” On the other hand, if a composer is interested in a socio-cultural response to her/his music, it could make a wise decision and figure out what are the perceptual and cognitive mechanisms which make audiences to like something. Using the proposed approach, may certainly prove to be more successful in sharing the electro-acoustic music with people who don’t know what word MIDI means.

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