From: Ben Goertzel <[redacted]>
To: "jeffrey E." <jeevacation@gmail.com>
Subject: Re: MUSIC and MIND ... Fwd: quick question -- AGI-16 snacks and reception sponsorship?
Date: Mon, 11 Jul 2016 02:56:54 +0000

I agree that rhythm is important but the actual sequence (and concurrent arrangement) of notes is important too... those papers certainly don't tell the whole story but I think they tell part of the story...

I experimented a lot in the 90s with: taking series of notes evolved by a GA (well the GA evolved the coefficients of a fractal-generating iterated function system), and then playing the same evolved note-series with different timings. I.e., I made up various timing rules, and I also played the notes with timings that I made up myself. Definitely it's true that the timing is critical, and the same series of notes with different timing will sound totally different and have a different feeling...

However, nevertheless, the mathematical structures noted in those papers are important...

How timing interacts with these mathematical structures is one of many open questions, right?

Put crudely, I think the algebra (as hinted in those papers) of a series of notes identifies **what patterns are there** to be easily recognized in the series of notes. But there are always gonna be too many patterns there. The timing puts boundaries around some patterns and not others, thus narrowing down the scope of possible patterns in the note-series, and identifying some rather than others.... And the timing also is what resonates with the dynamics of human emotions and human body-rhythms ...

so the subtlety of timing in music is partly that it has to serve multiple functions

-- emphasizing certain ones, among the many patterns implicit mathematically in a series of notes

-- resonating with human emotion and body rhythms

... ben

On Mon, Jul 11, 2016 at 10:40 AM, jeffrey E. <jeevacation@gmail.com> wrote:
> third paper same problem, bach was to have said playing piano is easy
> just push the right note at the right TIME . one without the other , is
> meaningless. imagine a minute wait between any of the group theory

> relevant notes. it woudl not be music
>
> On Sun, Jul 10, 2016 at 10:26 PM, Ben Goertzel <[redacted]> wrote:
>>
>> Just re-sending with a more appropriate subject line...
>>
>> ****
>>
>> Hmmm...
>>
>> I have been thinking a lot about music too, but from a different
>> perspective...
>>
>> Do you know this paper on Combinatorial Music Theory?
>>
>> paper:
>> http://andrewduncan.net/cmt/
>>
>> video:
>> https://www.youtube.com/watch?v=OMDtp89Xqlw
>>
>> It's extremely good, it clarifies some basics of music theory in a
>> mathematical way without the confusing archaic terminology of standard
>> music theory... and suggests various interesting new directions...
>>
>> This paper is also related and somewhat worthwhile
>>
>> https://www.math.washington.edu/~morrow/336_09/papers/Ada.pdf
>>
>> though neither as easy-to-read nor as interesting...
>>
>> What these papers are getting as are the hidden abstract-algebraic and
>> information-theoretic structures underlying melody and harmony...
>>
>> What you're talking about regarding symphonies is sort of like
>> "narrative structure" in stories it seems like -- or "discourse
>> planning" in dialogue -- i.e. it's higher-level
>>
>> That level is important, for sure. But what the papers I've linked
>> above are getting at is a bit lower-level --- more analogous to the
>> syntax and phrase/sentence level semantics of language, I would say.
>> The algebra and information theory of melody and harmony have to work
>> out at the level of individual chords and melodic passages, for the
>> higher-level development of a symphony or other complex work to make
>> sense...
>>
>> About
>>
>> > I mashed all of the four symphonies together ,
>> > playing recordings of the 3rd 5th 6th 7th all overlayed on each
>> > other,
>>
>> I have done stuff like that before, but not with classical music...
>> with my own recordings ;) .... Do you have a sound file of your

>> experiment? I'd be curious to hear...
>>
>> Interestingly, the "plumbing" work we've been doing to connect OpenCog
>> to the Hanson robots would also enable us to use OpenCog for music
>> composition / improvisation experimentation ... (i.e. we've been
>> dealing with real-time input and output, which we hadn't been doing
>> before)
>>
>> But at the moment (this opinion is of course subject to revision) I
>> somewhat feel that the basic problem of "what makes a melody /harmony
>> / rhythm pattern sound emotionally and cognitively appealing" has to
>> be solved before one moves on to issues of symphonic structure....
>> I.e., we probably gotta solve folk music before we can solve Beethoven
>> or Bartok ...
>>
>> Meyer's old theory of "surprising fulfillment of expectations"
>>
>>
>> http://rhythmcoglab.coursepress.yale.edu/wp-content/uploads/sites/5/2014/10/Emotion-and-Meaning-in-Music.pdf
>>
>> is basically correct IMO (if you don't know that book check it out,
>> you'll love his classical music examples) ... but the subtle point is
>> that the expectations and the surprise we experience are a subtle mix
>> of
>>
>> -- basic mathematical music-structure factors, as in the vein of the
>> two papers I linked above
>>
>> -- human psychology factors as modeled e.g. in Joscha's work and in
>> the Component Process Model (
>>
>> http://boccignone.di.unimi.it/CompAff2015_files/Phil.%20Trans.%20R.%20Soc.%20B-2009-Scherer-3459-74.pdf)
>> which we have introduced into the OpenCog / Hanson Robot codebase to
>> fill in certain gaps in Psi
>>
>> -- human body-rhythm patterns, to do with the way the rhythms of
>> different subsystems of our physical bodies overlay on each other,
>> which we perceive all the time sub and semi consciously and which
>> influence our perception of music; obviously even classical music
>> without a drumbeat is highly rhythmic...
>>
>> -- more abstract cognitive pattern recognition
>>
>> So a good melody packs up "surprising fulfillment of expectations"
>> where the expectation and fulfillment are assessed according to a
>> combination of the above 4 factors ... and if you leave any of the
>> above 4 factors out you're going to get lots of "false positives" ...
>>
>> All of the above factors are there in Chinese, African etc. music as
>> well as Western music, but manifested in different ways...
>>
>> I can pretty clearly see how to seriously investigate the above but I

>> can't at the moment see a "quick and dirty" way to make huge progress
>> quickly ... while seemingly simple, the question of "what makes a
>> melody appealing" actually wraps up a lot of issues ... BODY,
>> EMOTION, COGNITION ... plus MATH-OF-MUSIC ...
>>
>> Fascinating stuff though ;)
>>
>> If you want to design a research programme in this direction I'd be
>> game to participate; I don't want to drop my other OpenCog R&D
>> obviously but music just fascinates me at a heart as well as head
>> level, so I'd be willing to put some time into this in parallel with
>> making the Hanson robots work... I do have a feeling that to really
>> crack the problem of what makes a melody sound good, one has to crack
>> the problem of how feeling and body and cognition work together, which
>> is a key problem for AGI generally speaking...
>>
>> -- Ben
>>
>> P. S.
>> Of course, complex development of themes and counter and sub themes
>> and so forth is not exclusive to Western classical music.... For
>> instance this 30 minute instrumental-rock song composed by Buckethead
>> in memoriam for his mother has incredible subtlety of development
>>
>> https://www.youtube.com/watch?v=E5PXYehriYY
>>
>> ... so many themes introduced in the first half and then complexly,
>> genetically crossed over and synergized in the second half.. It is my
>> firm conviction that Buckethead will be remembered as the Beethoven of
>> the early 21st century ;) ...
>>
>> For me the ultimate is Prometheus, by Scriabin, though...
>>
>> https://www.youtube.com/watch?v=5GEwho6Dbnc
>>
>> do you know it? Wow.... This is cognitive and emotional development
>> beyond the ordinary human level, such as only a true genius madman
>> could produce. I had an amazing mental experience in San Francisco
>> in 2012 listening to Prometheus 10 times in succession ... try it
>> sometime...
>>
>>
>>
>> On Mon, Jul 11, 2016 at 9:39 AM, jeffrey E. <jeevacation@gmail.com> wrote:
>> > looking for AI and music. . a melody is a strange object, it is an
>> > inter
>> > as well as intra relation with notes and time. . there are inherent
>> > harmonies. and dissonance. . what i wrote to chonsky this moring
>> >
>> > today I conducted an experiment encouraged by Noam's wholly justified
>> > aggressive and detailed directives to joscha. . joshcha focused on
>> > layers
>> > being developed in the brain . the timing for the development of each
>> > layer

>> > being different per species .
>> > I postulate that music might be a frosted window into that structure.
>> > symphonies begin with their first " layer " a theme. in fact , there
>> > might be more than one theme in the first layer , , the second part of
>> > symphonic form is the complex development stage. where those themes
>> > are inverted, deconstructed , reconstructed etc ,and the development
>> > stage
>> > takes the most time . in the conclusion of the symphonic form the
>> > recapitulation of all that has come before it forms a " phenenoma of
>> > the
>> > piece " a whole ,made up of its smaller concepts . As opposed to
>> > listening to music to record which neuron is firing, as most
>> > musciolgists
>> > attempt . I propose that the music may be the audible result of those
>> > neurons firing, made possible by a select few who would attempt to
>> > notate
>> > those neuronal firings. Beethoven for example.
>> >
>> > The experiment . I mashed all of the four symphonies together ,
>> > playing recordings of the 3rd 5th 6th 7th all overlayed on each
>> > other,
>> > playing at the same time. - the way a brain might develop. I expected
>> > an
>> > ordered noise but to the surprising contrary , IT WAS AMAZING. .
>> > you can hear new "concepts " forming,
>> >
>> > iI wonder whether in the mind of a blind child , the " music" would be
>> > created even without the visual referencial. but created none the
>> > less.
>> > later when the visual can be tied to concepts , the anatomy may be
>> > hijacked
>> > to produce sounds . that somehow relate to the concepts. .
>> >
>> > I tried to mix music from different cultures- it didn't work. African
>> > does not work with western europe,- chinese works with neither of the
>> > other
>> > two. but within the same cultural music (the brain of the local
>> > species
>> >) the mash ups are beautiful.
>> >
>> > I would note that computers engage in "parallel processing" only in
>> > order
>> > to take a hard problem and break it into its component parts , working
>> > on
>> > each component separately, , here each problem Interacts and the
>> > their
>> > resolutions interact in remarkable ways.
>> > --
>> >
>> > On Sun, Jul 10, 2016 at 9:37 PM, Ben Goertzel <[redacted]> wrote:
>> >>
>> >> (i.e. being a "fiscal sponsor" for the HLAI/AGI conference is within
>> >> Humanity+'s mandate as a 501(c)3, so there's no problem here...)
>> >>

>> >> On Mon, Jul 11, 2016 at 9:36 AM, Ben Goertzel <[redacted]> wrote:
>> >> > We can route the donation through Humanity+, which is a 501(c)3 ...
>> >> > as
>> >> > we have done with some of your previous donations for my research...
>> >> >
>> >> > On Mon, Jul 11, 2016 at 9:33 AM, jeffrey E. <jeevacation@gmail.com>
>> >> > wrote:
>> >> >> is it a 501 c 3
>> >> >>
>> >> >> On Sun, Jul 10, 2016 at 9:30 PM, Ben Goertzel <[redacted]>
>> >> >> wrote:
>> >> >>>
>> >> >>> Hey there,
>> >> >>>
>> >> >>> Hope you're well...
>> >> >>>
>> >> >>> I'll send you another email about connecting this summer while I'm
>> >> >>> in
>> >> >>> the US if you'll be around...
>> >> >>>
>> >> >>> This email pertains to the AGI-16 / Human-Level AI conference which
>> >> >>> occurs upcoming week in New York (July 16-19).... at the New
>> >> >>> School.
>> >> >>>
>> >> >>> We are doing the last-minute nitty-gritty conference planning and
>> >> >>> find
>> >> >>> ourselves short on cash for snacks and for drinks at the conference
>> >> >>> reception / poster-session ... (the New School venue proved more
>> >> >>> costly than planned... we chose New School as an old college friend
>> >> >>> of
>> >> >>> mine is a prof and administrator there...)
>> >> >>>
>> >> >>> So I'm wondering if you might be willing to do a US$3000
>> >> >>> sponsorship
>> >> >>> (we have two other sponsors at the US$3000 level: Vicarious
>> >> >>> Systems,
>> >> >>> and Demiurge Technologies).... (We don't actually need the $$
>> >> >>> wired
>> >> >>> immediately, a commitment is enough)...
>> >> >>>
>> >> >>> We can then serve everyone "drinks and snacks courtesy of Jeffrey
>> >> >>> Epstein Foundation", or whatever foundation name you prefer (or
>> >> >>> just
>> >> >>> keep it quiet if you prefer)
>> >> >>>
>> >> >>> This is not insanely critical, but it would be a help... I believe
>> >> >>> these conferences are still quite valuable in terms of keeping free
>> >> >>> and open dialogue about AGI going in the research community, as
>> >> >>> opposed to having AGI work entirely sucked into the proprietary
>> >> >>> halls
>> >> >>> of big companies...
>> >> >>>
>> >> >>> thanks
>> >> >>> Ben

>> >> >>>
>> >> >>>
>> >> >>> --
>> >> >>> Ben Goertzel, PhD
>> >> >>> http://goertzel.org
>> >> >>>
>> >> >>> Super-benevolent super-intelligence is the thought the Global Brain
>> >> >>> is
>> >> >>> currently struggling to form...
>> >> >>
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>> >> >>
>> >> >> --
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