DECOMPOSITIONS
Chance Operations in Sound and Art

Gil Kuno
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ABSTRACT

Gil Kuno’s “Decompositions” is a series of sound based artworks that use “chance” to articulate sound compositions. This paper will discuss the philosophical background, precedents, and references for the work.

I will be exploring questions such as: Why does randomness help artists to articulate? Do we have mechanisms inherent in us that act as randomizers? How is interactivity a randomizer? What are some methodologies to help use chance to the artist’s advantage?

The paper will expose the limitations of the default human creative mechanism by exploring a music composition algorithm written by David Cope, as well as cover some mental illnesses related to creative skills. Most importantly, it will advocate the use of chance and randomness in order to cultivate new methods of expression – as I do in “Decompositions.”
PREFACE/PHILOSOPHY
Lucretius and the Clinamin
Lucretius

Before I begin, I would like to briefly describe one of the earliest records of theory/philosophy regarding chaos or randomness. It was conceived by the Roman poet and philosopher Lucretius (99 – 55 B.C.) He is the author of one of the more important books documenting Epicurean philosophy and physics, “On the Nature of Things.”

The Epicurean view of physics explained the universe and its inhabitants as an ongoing cosmic event. It claims the atoms in our body and the world we inhabit are at midpoints of their travels, and will continue their trajectory after we perish. Lucretius adds that there is a random motion or a “swerve” in atoms, which he coined the “clinamen.” In “On the Nature of Things,” he writes:

“The atoms, as their own weight bears them down
Plumb through the void, at scarce determined times,
In scarce determined places, from their course
Decline a little- call it, so to speak,
Mere changed trend. For were it not their wont

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Thuswise to swerve, down would they fall, each one,
Like drops of rain, through the unbotted void;
And then collisions ne’er could be nor blows
Among the primal elements; and thus
Nature would never have created aught.1

Here Lucretius claims atoms have a “swerve” about them, without which they would never collide with each other to spawn anything. This is his way of accounting for a “free will” in nature – explaining there is a mingling of matter instead of atoms infinitely expanding in its own straight path after the big bang.

Epicurians are not atheists, but materialists – they claim we have been formed without the aid of the Gods, but does not deny their existence. They claim we were created by the swerve and free will of the individual atoms, independent of the gods.2 It is interesting to note that these Epicurian concepts predate those of indeterminacy, quantum physics, and chaos theory by thousands of years.

The concept of the Clinamen is still referenced today, appearing extensively in works by philosophers and writers such as Harold Bloom, Gilles Deleuse, Michael Serres, Jaques Derrida, Jaques Lacan, Jean-Luc Nancy and Tiqquin, often to develop their theories of determinism, chaos, order, multiplicities, among others.

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INTRODUCTION
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I use “chance” as an inspiration source. I feel the human creative mechanism in its default state is not adequate to create extraordinary works. The artists that do have the innate ability to do this often have some type of mental illness. The list of famous artists that are mentally ill is endless (some are listed later in the paper.)

Through this paper, I hope to explore how artists can use “chance” and “randomness” to aid in their creative process without having to rely on the brain’s chemical imbalances.

I will start by discussing John Cage’s philosophies and compositional works, as well as the works by some of his followers.

As an insight to the mechanism on how the human mind composes a musical piece, I will explore works by David Cope, creator of successful generative music algorithms which demonstrate how relatively simple the default creative mechanism is.

I will touch on some theories behind how mental disorders may help bring inspiration to an otherwise “run of the mill” train of thought.

The history of noise music will be covered as a background to my references, briefly discussing the Futurists, Musique Concrete, Fluxus, Krautrock, Industrial Rock, Japnoise, etc.

The chance based works from Walead Beshty, Maywa Denki, Tim Hawkinson, among others will be explored as references for my work. Works by Hanatarash (Eye Yamatsuka/Boredoms,) The Haters, Christian Marclay, and will be described as references for chance based performative pieces.

As examples of how I use “chance,” I will cover several of my pieces in detail:
-Installations: Composition 20/40, The Antmaster
-Performance pieces: Aerosol, Slinky Piece, Pogo-phonic
-Screen based: Wiggle Portal

These pieces encompass those which use chance and randomness in the process of creation – a new direction cultivated during my stay at UCLA.

In closing, I will summarize my research, as well as discuss possible directions for future “Decomposition” pieces.
JOHN CAGE AND THE CHANCE OPERATION

“What he did was constantly to bring up the possibility of music being an art form.”

Morton Feldman on John Cage

JOHN CAGE AND THE CHANCE OPERATION

“Chance” based pieces were not new in the art world. The French Surrealists used various methods to create “automatic writing” – chance based written works in which the writer defocuses and composes text in a dream state. In the 30s and 40s, composers Karlheinz Stockhausen, Luciano Berio and Pierre Boulez created chance based pieces by leaving their pieces “open” for interpretation by their performers. These “controlled chance” works were considered part of the “aleatory” movement (Cage’s works are sometimes considered aleatory as well.)

Abstract expressionists Jackson Pollack, Willem de Kooning, Franz Kline, etc were active from the 30s, and developed a chance based “action painting” style – a spontaneous and intense free form method of painting where the painter would almost throw the paint on the canvas, working interactively with the physics of inertia.

However, Cage was able to illustrate and exemplify his chance methodologies best with the sheer number of works, and being able to articulate his philosophies in words extremely well.

Cage soon turned the spokesman of choice for the “chance operation,” his methods and teachings became the trend for artists of the era.

John Cage

John Cage is a philosopher and composer who is one of the innovators in using chance as an inspiration for musical composition. Cage widely popularized the “chance operation” in his compositions – his methods became the trend for articulation methodologies in the art world for decades to come. (“Chance Operation” is a method to incorporate factors of chance into art such that the artist’s creativity is not the sole source in realizing the resulting piece.)

John Cage often referenced American modernist composer Charles Ives (1874 – 1954) who favored sound (as opposed to song) and process over structure, as well as his professor Henry Cowell (1897 – 1965) who was another innovator in composition techniques. Cage was also influenced by Sri Lankan philosopher Ananda Coomaraswamy’s ideas, as seen in Cage’s quote “The function of art is not to communicate one’s personal ideas or feelings, but to imitate nature in her manner of operation.”

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Cage used music as a “vehicle to question the relationship between the elements of music: Pitch, Duration, Timbre, and Dynamics. He tried scoring compositions using chance combinations read off charts of possibilities - in the early years, by tossing coins or referring to the Chinese I-Ching (book of cosmology,) and in the later years using computers.”

Cage claims, “My choices consist in choosing what questions to ask.”

Some example compositions:
“Imaginary Landscape No. 1” (1939,) “Bacchanale” (1940,) and “Sonatas & Interludes” (1948) are compositions created for “prepared pianos” in which objects such as bolts, weather-stripping, pieces of rubber, screws and bolts, were placed between the strings such that playing on the piano would result in unpredictable sounds.

In an interview, John Cage quoted one of Marcel Duchamp’s goals, “To reach the impossibility of transferring from one like image to another - the memory imprint.” Cage then elaborates, “We don’t have to have tradition if we free ourselves from our memory. Then each thing we see is new - it is as though we have become tourists, living in countries that were very exciting because we don’t know them. I can’t tell anybody how to listen or how to look - I

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8 André Chaudron, “John Cage Database” http://www.johncage.info/
certainly can't tell them what to remember, particularly when I don't want to remember myself."10

John Cage’s motivation for his works can be seen in this quote. Cage was interested in liberating sound from conventions of traditional music, thus freeing sound from being imprinted, or remembered. He wanted to “give up the desire to control sound; to clear his mind of music and set about discovering means to let sounds be themselves rather than vehicles for man-made theories or expressions of human sentiments.”11

Cage’s music after the late 40’s was structured by units of time, but not by rhythmic patterns or harmonic systems. His compositions “frustrate expectations of order and logical construction; portraying a refusal of psychology, history, and personal expression. Rather, he was concerned with chance, open experience, and process.”12

“Imaginary Landscape No. 4” was written for 12 radios and 24 performers – each radio was manned with 2 people, one would control the frequency, and the other the volume and tone knobs. The composition would sound radically different every time, as the broadcasts at the time of the performance could never be identical.13

13 André Chaudron,”John Cage Database” http://www.johncage.info/
Cage felt that he would be able to avoid the logical control of sound (liberating it from personal taste and memory) via disciplined “submission to chance.”14 – Cage felt he could learn more on the process through the spirit of Zen Buddhism. In 1946, Cage studied Zen under Japanese Zen Master Daisetsu Suzuki. Meditation on “emptiness” led him to give new weight to “the one new idea in music since Beethoven. The idea that sound and silence are co-equal.”15 Cage was inspired to compose a piece where sound and silence existed simultaneously. The idea became a reality after being inspired by Rauchenberg’s “White Painting,” to create his most (in)famous piece, “4’33’.”16 (Cage, Rauchenberg and Jasper Johns were all in the same community of friends.)

"4'33" was a piano composition in which the only action by the pianist was the opening and
closing of the piano lid; there were no notes in the score to be played. However, it was not a
"silent" piece (though it is often referred to as such) – the focus turned from the sounds from
the performer to the environment. In the first performance (1952,) David Tudor was the
designated performer. At first, the sound of the wind and the trees entered the movement,
then the sound of raindrops. Sounds of Tudor turning the pages of the score followed, then
sounds of the audience whispering and muttering. The piece ended with Tudor closing
the piano lid and leaving his chair, resulting in an uproar from an angry audience.17

Cage speaks of silence, "There is no such thing as an empty space or an empty time. There is
always something to see, something to hear. In fact, try as we may to make a silence, we
cannot."
"sounds occur whether intended or not."18 Cage defines the parameters of silence to
encompass "all the sounds we don't intend."19

“The John Cage Generation”

One of John Cage’s students in his workshops was Allan Kaprow (a big influence to the Fluxus movement,) who applied Cage’s methodologies to theatrics. Cage influenced Kaprow in two regards: the practice of chance operations and the equation of noise with music. Kaprow recalls, “it was apparent to everyone, that these two moves... could be systematically carried over to any of the other arts.”

Kaprow popularized the “happening,” where actors are given a set of instructions they must carry out during the allotted time frame (much like musicians playing a score) in the performance space.

Another artist who was heavily influenced by Cage was George Maciunas, founder of the Fluxus Movement. He gathered like minded artists such as Joseph Beuys, Dick Higgins, Nam June Paik, WolfVostell, La Monte Young and Yoko Ono to create the Fluxus group; the first incarnation being from the early 60’s. They popularized the “instruction” which was a minimal instruction set which was a “score” to be interpreted freely by the beholder. Some of the more famous are La Monte Young’s “Draw a straight line and follow it” or Yoko Ono’s

21 Tate Modern http://www.tate.org.uk/modern/thelongweekend2008/15497.htm
collection of instructions "Grapefruit." One of the first interactive pieces using technology comes from Nam June Paik with “Magnet TV” (1965) where a large magnet is set on the top of a television to have users distort its image.

Cage had a direct influence on choreographer Merce Cunningham, his partner of over 50 years. The two collaborated often on dance pieces that use chance to create choreographies. Together with Rauchenberg and Johns, the two became part of a circle of young gay artists whose “anti-ego” ideals challenged the macho, self expressive abstract expressionists.

Cage’s fascination with environmental sounds can be seen in Bill Fontana’s sound sculptures, many of which deal with the displacement of site specific acoustics. His Kirribilli Wharf (1976) took sounds from a pier in Sydney and phoned them into an eight channel installation in a gallery. A more recent Earth Tones (1992) consists of loudspeakers buried in a Northern

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Californian ranch which issue high frequency sounds delivered from the Pacific Ocean.

His “Speeds of Time” (2004) won a Nica at the 2009 Ars Electronica Festival. Fontana explains this piece as “a musical deconstruction of the most famous acoustic icon and symbol of time, Big Ben. Live sensors and microphones are mounted on the clockwork mechanism and near the bells of Big Ben to generate a spatial-acoustic composition that is placed in an historic colonnade of the New Palace Yard, directly below and within earshot of the bells. The presence of the sound sculpture in this setting interacts with the natural sound of the bells, creating a multi-dimensional acoustic zone.”

Though Cage passed away in 1992, his methodologies are still an active influence in today’s art scene. Richard Kostelanetz, editor of several books about Cage, wrote in a New York Times Magazine article in 1967, “Perhaps no one living artist has such a great influence over such a diverse lot of important people.”

His work provided answers to artistic questions that have “shaped the imagination of our time.”


LIMITATIONS OF HUMAN CREATIVITY

David Cope “Experiments in Musical Intelligence”
LIMITATIONS OF HUMAN CREATIVITY

David Cope’s work support my theories on how the default human creative mechanism may not be able to come up with a truly groundbreaking idea. Cope’s work Emmy is an excellent model for the human thought process, exemplifying how simple our creative mechanism is.

David Cope

David Cope is a composer, scientist, writer, programmer, game designer and professor emeritus at the University of California, Santa Cruz. He is the author of one of the most successful artificial intelligence algorithms which compose music in the style of the music input into it.

Cope started writing the program, called Emmy (EMI – Experiments in Musical Intelligence,) in 1981 and has produced works in the style of over 100 composers since. Cope uses the word “recombinancy” to describe his approach. A simplified explanation is as follows:
1. Create a database of music you would like to recombine.
2. Transpose all notes to the key of C.
3. Segment notes into groups of quarter note beats.
4. Along with each group, add a database entry denoting what note was next in the composition.
5. Have the program select the first note/beat of any song in the database.
6. Examine what note it was to play next.
7. Find a group of notes that starts with that note and append to the prior group.

By repeating 6 and 7, the program will have created a string of notes similar in style to the composer’s music in the database. There are many more algorithms (rules for phrasing and creating structure, etc.) which need to be added to create a proper “song,” but these are the basics behind Cope’s methods.28

Examples of songs created by EMI using the above methodologies is on Cope’s website:
http://arts.ucsc.edu/faculty/cope/mp3page.htm

Cope’s “5000 Works in Bach Style,” where he had Emmy compose 5000 chorales in Bach style, is here:
http://arts.ucsc.edu/faculty/cope/5000.html

This work successfully shows the computer’s role in composition, as no human composer would be able to write 5000 compositions in a lifetime (it would take 10 years x 8 hrs/day to simply listen to them.)

28 Personal interview with David Cope. 2007, also
As you can hear, Emmy’s compositional skills are uncannily genuine sounding. Cope has received numerous awards for his achievements with the program, including two National Endowment for the Arts Fellowships, fifteen ASCAP standard Panel Awards, Composers’ Forum (New York City) recital award, Houston Composers Symposium Award and numerous university grants. He has received praise from many distinguished experts. (e.g. Bernard Greenberg claims “EMI is the best attempt at credible automatic art I have yet seen, and confirms my faith that beautiful, arbitrarily interesting, emotionally challenging music can be created programatically.”

Judging from its success, Emmy’s compositional process may be correctly simulating some aspects of the human creative mechanism. Does this mean our brains are simply tapping into databases (our memory) and recombining shards of notes?

Luckily for us, Emmy is not complete. Cope claims he still has to hand pick presentable compositions out of the many iterations that Emmy comes up with. Cope claims, “Although I often give figures of four or five to one in terms of rejected-to-accepted output, this figure does not include the number of outputs created while testing the database and debugging the program. Thus, rejected outputs may actually number in the thousands.”

So the best computer algorithm still can not judge the “genius” work out of a lot – apparently, there is something left in our creative process that is not simply “cut and paste.” What is the “divine inspiration” that comes to an artist when he/she creates a successful piece? Is our creativity limited to Emmy-like “database driven” creations without them? Are there chance operations or randomizers in our mental process that help us to think “out of the box?” I will touch on some theories in the next chapter.


CREATIVITY AND PSYCHOSIS
CREATIVITY AND PSYCHOSIS

There are numerous stories about creative minds having mental disorders. I feel these disorders may act as a “chance operation” in the human creative mechanism to provide inspiration to an otherwise “average” train of thought. Some of the more famous artists diagnosed with mental illness are as follows:

Salvador Dali, Yayoi Kusama, and Eric Satie, were/are considered insane, Ernest Hemingway, Yukio Mishima, Juzo Itami and Virginia Wolf committed suicide, Sir Isaac Newton had paranoia, Vincent Van Gogh, Brian Wilson, Robert Schumann, John Keats, Edgar Allan Poe,

In a study by Arnold Ludwig (the largest study ever conducted regarding the connection between creativity and madness,) Ludwig found that mental illness occurred more frequently in the creative group than in the general population. He found that: 60% of composers, 73% of visual artists, 74% of playwrights, 77% of writers, 87% of poets had psychological problems. However only 20% of scientists, politicians, architects and businessmen had even mild mental illness.\footnote{Arnold M. Ludwig, “Method and madness in the Arts and Sciences” Creativity Research Journal 11(2) (1998) 93-101}

Much of the psychedelic art and rock from the 60s is said to be drug induced. The Beatles’ psychedelic albums and movie “Yellow Submarine” are iconic productions from this era, when artists would force a dementia about themselves with the use of drugs such as LSD and Marijuana. Brian Wilson from the Beach Boys claims he still suffers mental problems as a result of his drug use.\footnote{Diane Sawyer, “Brian Wilson Interview” Prime Time Live (October 10, 1991)}

A study by psychology researcher Shelley Carson on 182 Harvard University students yielded some insight on the correlation. Carson had a theory that creativity is “marked by a bringing together of seemingly unrelated ideas, memories, images, and thoughts.”\footnote{Sharon Begley, “Why Mad Scientists are Mad: What's Behind the Creative Mind?” In Character. http://www.incharacter.org/} She claims that creative people might have a leaky mental filter, keeping them from dismissing irrelevant information. Instead, they "entertain them long enough for one of them to connect with
another thought that is kicking around – giving birth to a novel, creative idea.”

Screening “irrelevant” information most probably helps one to focus, and may keep one sane, as contemplating every little sight and sound can drive one insane. The reductions in this filtering mechanism, called “latent inhibition,” has been linked with mental illness. Carson felt that this “failure” might spur creativity. Her tests indeed showed that creative students had significantly lower scores than the less creative.

Carson also found that a high IQ was necessary in order to sustain the creativity. She explains, “Getting swamped by new information that you have difficulty handling may predispose you to a mental disorder, but if you have a high intelligence and a good working memory, you are much more likely to be able to combine bits of new information in creative ways. We saw creativity increase as IQs climb to 130 and even up to 150.” However, reductions in low latencies in those with average IQs, did not increase creativity. Carson adds, “To be creative, you can be bright and crazy, but not stupid.”

Distinguished professor of psychology at UC Davis, Dean Simonton, claims the inability of the mentally ill to keep their ideas constrained within “their usual conceptual boundaries” (a sign of psychosis) becomes an asset for creative work. This can lead to paranoia, tendencies to see conspiracies and suspicious links, it can generate novel, creative combinations. Simonton claims mental illness is also marked by difficulty keeping out external stimuli, leading to incongruous combinations. He argues, that mental illness “seems to permit the production of numerous ideas that are highly unexpected. People with just the right amount of psychoticism would be prone to all sorts of seemingly irrelevant ideas popping into their heads almost randomly.”

38 ibid
Mark Mothersbaugh of Devo claims he has a “mild dyslexia” which causes him to remember things a bit “out of whack.” He claims this is a blessing however – he believes that his dyslexia acts as a “randomizer” causing him to create art and music that is out of the ordinary.\(^{42}\)

The creativity/dementia correlation is definitely a science, though it may be a distressing theory for the artist. Must the artist give up a part of their sanity in order to articulate well? If a person is mentally “healthy,” is there no hope for him to succeed as an artist? For better or for worse, we have no say in what kind of a balance we want to have. Those that have “randomizers” naturally inherent can rely on them, those without can train themselves to invent “chance operations” to assist their creative process.

In the following sections, I will cover artists’ works which do just this. The artists behind these reference works have each come up with new, innovative uses of the “chance operation” to assist their creative process.

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\(^{42}\) Personal interview. 2008.
NOISE MUSIC

Chance Operations in the Mass Market
NOISE MUSIC

As a precursor to my references I will give a brief background history of noise – following its development not only into an artform, but also into a listening media for the masses.

Noise Music for the Masses

When was it that noise was accepted as music by the masses?

Was it in the early 1900s when Arnold Schoenberg proclaimed his theory “Emancipation of the Dissonance”, in which he claimed music could be based on dissonance? Certainly not when Futurist Luigi Russolo held his concert Gran Concerto Futuristico in 1913 using his noise producing Intonarumori gadgets. He was met with strong disapproval and at times violence from the audience. (Russolo wrote about the concept of adding noise to classical music in his 1913 manifesto “Art of Noises.”)  

Was it in 1939 when John Cage created a composition for metal percussion instruments – a piece with no tonality? Was it when Pierre Schaffer experimented with sampled sounds in

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In the beginning of the 60s, the avant-garde music scene was starting to embrace abstract electronic sounds, with artists such as Karlheinz Stockhausen, La Monte Young, Steve Reich, and Terry Riley leading the way. Sounds created by electronic instruments sounded new to the ear at the time, allowing for easier listening to the compositions which had little structure.

Towards the end of the 60s, an experimental music scene appeared in Germany which came to be known as Krautrock. Bands such as Tangerine Dream, Faust, Can, Ash Ra Tempel, Neul, Kraftwerk, and Cluster released albums which had abstract instrumental tracks sandwiched between post psychedelic jams. The beat driven jam tracks helped to deliver the experimental music to the average music fan.
Noise concerts were certainly drawing crowds after the industrial music boom of the mid 70s (which had its roots in German Krautrock.) Kraftwerk, Faust and Suicide are considered the inspirations of the industrial scene; the bands Throbbing Gristle, Cabaret Voltaire, SPK, Einstrüzende Neubauten, and Boyd Rice were in the front line. With many of these bands entering college charts and dance charts in the 80’s, some could argue that syncopated noise (industrial music) had been finally accepted into the mainstream.

Japanoise

However, there are always a strain of artists that never want to be accepted by the masses. There was a noise music scene from Japan in the early 80s which took John Cage’s chance operation to a much more extreme trajectory. Artists such as Hijokaidan, Hanatarash, Masonna, Merzbow, Incapacitants, and Violent Onsen Geisha lead the scene with their compositions of pure white noise, with barely any tonality or discernable structure.

Their stage presences were apocalyptic— from the destructive performances of Hanatarash, to the live SM antics of porn queen fronted C.C.C.C., the Japanoise scene seemed to be the termination point for all sound composition and performance. The Japanese avant garde performance troops Group Ongaku, The Gutai and Butoh performances from the 60s most probably were an influence on Japanoise artists, as these world pioneers in freeform expression had exemplified the methodologies of tearing down performance conventions.

To The Rescue

British Techno artist Cristian Vogel’s album title “All Music Has Come to an End” seemed very appropriate in describing the music scene at the time of its release in 1997. However, he was one of the few leaders in the Techno movement that was able to salvage musical creativity from the wreckage. Computers were the key to finding new methods of applying chance to audio articulations. Musical creativity once again flourished with a new generation of techno savvy artists such as Aphex Twin, Autechre, Plaid, etc., all using the computer in novel ways to incorporate chance into the engineering of new forms of music/noise. Some of these artists are also programmers, and use proprietary algorithms to randomize their output.

46 Paul Hegarty, Noise/Music: A History (New York: Continuum, 2007), 143
Richard D. James, a.k.a. Aphex Twin is an avid programmer. He writes proprietary software from scratch (without using Max MSP), as well as builds hardware such as filters, drum machines, samplers, etc. which he uses to aid in his compositions. One piece of software swaps percussion sounds – his unique rhythms are spawned from this program.\(^{47}\) In his 2001 composition “Windowlicker” he included a sound sample (at 5:27) which was a sample sonified from an image of his face. \(^{48}\)

Image of face decompiled from sample within “Windowlicker”

These artists and many other young innovating musicians (Matmos, Boards of Canada, Ryoji Ikeda) are active today (and popular in the alternative music scene, as well as in academic/art circles) laying out the frameworks for future expression.

\(^{47}\) Greg Rule, “Still Hacking After All These Years” Keyboard Magazine (April 1997.) http://www.aphextwin.nu/learn/98136121766088.shtml

REFERENCES

Chance Based Artworks
REFERENCES

The following are pieces that successfully use “chance”, “randomness,” or “openness” to further the artists’ original vision. Many of them are computer based works, however some are purely analog – their common thread is in their brilliance in concept, execution, and innovative use of “chance” to articulate. 

Very few of these artists are considered mentally ill, yet their work is brilliant and complex. They are all successful masters of embodying the “chance operation” in their articulations.

Toshio Iwai

Toshio Iwai is a Japanese artist whose works have spawned a new category of media art. His early interactive works consisted of experimental animations and pre-cinematic “toys,” such as flip books and zoetropes. Since 1986 he has been creating “visual music systems” which deal with innovative interfaces to create sound.

Toshio Iwai “Composition on the Table” 1998

Iwai’s “Composition on the Table” (1998) is one example of his visual music interfaces. The
interface is composed of four tables with various controllers (switches, dials, and sliding boards) that users can manipulate to control sound and projected images. In one iteration, a grid is projected on the table; each node contains a dial which controls an arrow projected onto it. Animated objects act as “playheads” by traveling along the gridlines and playing notes at every node. Players can direct animated objects by setting arrows at each node on the grid using dials. When an object reaches a node, a note is played, then moves onto the direction the arrow is pointing to. Participants can create interlocking loops and rhythms by directing the projected objects with the arrows. Multiple players can join in directing the arrows, promoting a collaborative musical composition.  

The resulting composition is one created by the random directions the arrows on the table are pointing to, ever morphing with every user’s input.

Many of these interactivity experiments were eventually realized as games for consoles. (e.g. Simtunes for the PC, Electroplankton for the Nintendo DS. etc.)

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50 Nintendo Electroplankton HP: http://electroplankton.nintendods.com/
Walead Beshty

Walead Beshty is a London born L.A. based artist who’s work takes the form or aleatory photos and sculptures in which he explores the effects of chance in his creative process.

In Beshty’s Fedex series, he sends shatterproof safety glass via Fedex in the corporation’s proprietary shipping boxes. The glass cracks but holds its box form, revealing stress cracks from its transit. Walead explains, “The form is directly tied to the movement of the work; how the work is seen in different locations.” “The boxes themselves are a proprietary volume owned by Fedex. DHL and UPS are barred from using the exact same size and shape. – it is a unit of space owned by a corporation, within which to ship objects. Each time it is shown, it’s placed back into the box and shipped again. Ostensibly, it could accumulate form in perpetuity.”

In his Passages exhibit, Beshty lined the floor of LAXArt gallery with carpet padding, and covered the padding with shatterproof mirrors. Each attendee cracks the surface of the mirrors as they walk through the gallery, changing the form and refractory properties of the floor; and subsequently changing the way we engage his photographs on the walls.\textsuperscript{52}

\textsuperscript{52} Michael Buitron "Leap into the Void" http://imoralist.blogspot.com/2009/04/walead-beshtys-passages-at-laxart.html
As a student of John Maeda, Golan Levin is an acclaimed visualizer, having created many interactive pieces that visualize sounds or user input. He has several pieces that deal with sound, one of them being an audio sequencing installation called “Scrapple.”

Scrapple is an installation in which objects placed (by the user) on a table are scanned and interpreted as notes on an “active score.” The Scrapple system scans the grid on the table surface as if it were a musical score, playing notes in real-time depending on which objects are in its path. Various forms create different sounds - curves allow for cascading melodies, and wind-up toys yield morphing rhythms. Video projections onto the table create a simple augmented reality, in which the objects placed by users are illuminated by luminous trails.

Levin has not provided a score of his own, but a system for participants to compose in. He himself does not articulate the tonality or timing of the musical composition; only the timbre of the samples used. Museum goers are his randomizers, as they decide where the notes should lie in time, on the table, and in the composition.

53 Golan Levin Website: http://www.flong.com
Tim Hawkinson

Tim Hawkinson is a Los Angeles based artist (a UCLA MFA alumni) who creates mostly sculptural pieces, many of which are kinetic.

His Emoter piece is a mechanical face in which the facial features are connected to a television. Photo resistors on the television sense the brightness of a particular area on the television and move the respective facial feature. The resulting expressions (and sounds from the pneumatics) are driven by the random image on the television screen at the time.54

Tim Hawkinson “Emoter” 2002 Altered Ink-Jet Print, Monitor, Stepladder & Mechanical Components

Maywa Denki

Maywa Denki is a media art group founded by Nobumichi Tosa. The group is named after his father’s company (Maywa Electrical Devices,) and wear uniforms typically designed for factory workers in Japan. Maywa Denki are the most famous media art unit in Japan, with many of their inventions sold to the masses via toy stores.\(^{55}\)

One of their pieces called “Sei-gyo” is a fish controlled tractor. The Japanese character is written 聖鰐 which means “Holy Fish,” as the vessel that houses the driver is shaped like a cross (It is also a pun on the word “control” which is also pronounced “seigyo”.) There are sensors in each leg of the cross – the tractor will advance according to which sensor is triggered. The piece was designed such that a large aquarium would not be unnecessary, as the fish would be able to cover long distances despite it being confined in a small space.\(^{56}\) The resulting device is a chance based transportation bot; its directionality governed by the whim of the fish it houses.

\(^{55}\) Nobumichi Tosa. *Maywa Denki Website.* http://www.maywadenki.com/

Ryota Kuwakubo

Ryota Kuwakubo is a Japanese media artist, debuting in 1998 with “Bitman,” a collaborative piece with Maywa Denki. He is one of the forerunners of the genre of media art called “device art,” in which artists find new ways to articulate their vision in the form of gadgets. He has won the top award at the Japanese Media Art Festival in 2004, the Nam June Paik award the same year, and has made multiple appearances at Ars Electronica.  

His “PreparedRadios” receive talk radio broadcasts from the airwaves, however filter out human voice before it is played through the speakers. The resulting audio is an assemblage of artifacts of the speech organs, such as breaths and clicks. The radio is producing a chance based audio feed which remains audible as long as the radio channel is broadcasting.

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Christian Marclay

Christian Marclay is a New York based sound artist who started his art career having an interest in Fluxus and Joseph Beuys. He is a turntablist, noise collager, performance artist, and sculptor, often making use of randomness and chance in his works.

“Record Without a Cover” (1985) was released as an album on vinyl, however was distributed bare without a record sleeve or cover. One side was etched with the credits, and the other side had audio recorded on it. Through the distribution process, the record would accumulate dust and scratches and eventually sound different for every owner.\(^{59}\)

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In another experiment, Marclay cut various records and rejoined pieces from different records together into new wholes. The records would play snippets of songs from the different records in quick succession, along with the clicks and pops from the seams. The resulting piece was an audio-visual collage, its look and sound reconstituted through the Frankenstein experiment.

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Performance Pieces
Hanatarash is the noise performance unit of Osaka, Japan based artist, Eye Yamatsuka (currently of the Boredoms.) Meaning ‘Snot Nosed,’ Hanatarash formed in 1983 – the band was constantly changing formation, and eventually was recognized as more of a solo project for Yamatsuka. Their numerous recordings were of the harshest variety of noise, often released on cassettes and sold to independent record stores close to Yamatsuka’s residence.

For his Hanatarash persona, Yamatsuka amplifies sounds of entropy in his performances, and was notorious for the violence. Yamatsuka would attach mics to various breakables (sheets of glass, scrap metal, bottles, etc.), and mangle or destroy them (sometimes with industrial tools.) Concert goers had to sign consent forms that released the artist and the venue from responsibility in the case of injury or death of the attendee.

Hanatarash’s most legendary performance was in Kyoto in 1986, when Yamatsuka made his appearance crashing though the wall of the concert hall on a power shovel and proceeded to destroy the venue.

There was little that was premeditated about a Hanatarash performance – possibly the

selection of what to destroy and amplify, but once the performance started, Yamatsuka was not to be controlled; all was left to chance.

The Boredoms

Yamatsuka is currently the leader of the Boredoms, an experimental rock band – arguably the most widely known Japanese band outside of Japan, having toured the US on multiple Lollapalooza concerts. On August 8, 2008, Yamatsuka performed a Boredoms concert at La Brea Tar Pits employing 88 drummers - possibly the most drummers to ever be orchestrated in one location. The Boredoms' original composition becomes a much more convoluted piece by the multiple improvisations and fills that the army of drummers add.63

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64 Tyler Durden http://flickr.com/photos/tylerdurden3181/759170316/in/set-72157600724645690/
The Haters

The Haters are a noise unit formed by GX Jupitter-Larsen in the West Coast in 1979. They started as a punk rock band, but GX’s interests strayed away from creating structured music and turned to abstract performances. GX uses audio as a stage curtain – the commencement or termination of sound marks when his performance begins or ends.65

In “Changing the Tire” he amplified the sound of a tire while he used grinders to lacerate it. The venue was not only filled with industrial noise from the grinders engaging the tire, but also with the pungent smell of burnt rubber – a multimedia presentation that transcends those of solely sight and sound. The resulting sounds are of such complexity that no musical notes or score can illustrate the output or structure.

In the performance “Building Empty Holes,” The Haters amplify the act of punching holes into sheets of paper. As the show progresses, the venue becomes covered with chad (paper remnants from the hole punching) – a performance narrative slowly gives birth to a chance based installation space.

In Christian Marclay’s piece from 2000, “Guitar Drag,” he strapped a guitar to the back of his pickup truck and proceeded to drag it for several miles. The guitar was “live” – plugged into a guitar amplifier through the process and yielded abstract noises of the guitar’s contact with the ground during the drive. Even if the drive was routed through the same roads in the same automobile, the score would be not be able to be reproduced.

DECOMPOSITIONS

Slinky Piece
Aerosol
Composition 20/40
Pogophonic
The Antmaster
Tracts
Wiggle Portal
DECOMPOSITIONS

Gil Kuno’s “Decompositions” use the “chance operation” as the guiding force to articulate audio compositions. These works constitute the bulk of my work at UCLA, and has become a new trajectory of exploration.

Slinky Piece

Slinky Piece is about rethinking the children’s toy as an instrument in sound composition. A ladder housing several microphones is the primary sound pickup device. The ladder is “played” by successively dropping multiple Slinkys down the ladder. The sound of the descending Slinkys is processed and amplified, yielding an increasing aural cascade. A carnage of Slinkys develops at the foot of the ladder yielding a chance based sculpture.

The piece was presented at the Hammer museum in Westwood with two performers who handled the Slinkys. Each step on the ladder housed a contact mic under a sheet of galvanized steel – these acted as the pickups for the Slinkys. The audio was treated in real time to give the composition more movement.

Slinky Piece brings outside performers into the composer’s seat to enable an “open” installation. Even if the same performers were brought back to the same venue with the same equipment, it would not be possible to reproduce the composition or sculpture.
Aerosol is a collaboration between GX Jupitter-Larsen from The Haters and Gil Kuno. The two amplify and treat the sound of an aerosol can to create a live soundscape. The image of the can discharging is projected behind the performers to deliver the audiovisual articulations of erosion and entropy. The performance begins when the gas in the aerosol is released and ends when the can is empty.

The artists wear gas masks as if they were a metaphor for the effects of man’s contributions to entropy in the environment. This, despite the fact that the content of the can mostly just water – the pure and essential substance for life on earth.

This implied discrepancy is further exemplified by the absurdity of the performers taking their cue from the time constraints from an artificial object. Again, as if a metaphor to the current state of human beings suffering the consequences of disrupting their environment. This despite the fact, it was the artists who selected the function of discharge as the boundaries of
the performance.

This picture finally becomes complete with the object centricity seemingly embodied by both the focus, and the actual spotlight, being placed on the can rather than the artists during the performance, though it is the artists who have the greatest influence on both the cause and effect of the can’s discharge.

The audio from the two performers is complex – the already chaotic, near white noise coming from the aerosol can is treated using multiple effectors and computer plugins manned by the will of two performers. The result is a composition of sounds heavily processed and retexturalized, impossibly convoluted; yet each player’s intentions and the underlying can’s sounds undeniably intact.
A ping-pong table is equipped with microphones such that it is transformed into an audio input device. The game of ping-pong is amplified such that the players of the game also become the complicit composers of an improvised piece.

The game of ping pong is sport rich in audio cadences - Composition 20/40 accentuates the acoustic experience by dressing its sound with effects and making it a much more prominent element of the game. The players’ game play translates into a new audio composition with each swing of the paddle.
Pogo-phonic

Pogo-phonic is a performance piece that features proprietary audio generating pogo sticks. Several pogo sticks were modified to house noise generating mechanisms such that riding them would create a chance based audio composition. Performances were held at the Exit Strategies opening at the Broad Art Center, as well as at the HASTAC conference in LA.

The performance was a collaboration between Vurtego Inc, who supplied pogo sticks, as well as performers (composers.) Vurtego’s pogo sticks are pneumatic – they are essentially pistons that compress air in a tube. A formal aerospace engineer at Vurtego has designed the device such that much higher jumps can be obtained than conventional spring driven pogo sticks. His son, Brian Spencer is the founder of the company, as well as a former Guinness World Record holder for the highest jump on a pogo stick (6 feet.)

There were three types of Pogo Sticks created for the piece. One type was fitted with a wireless mic to pick up the natural sounds of the Pogo. During the performances, the professional pogoers used this model, as it was the most durable.
Another internalized bass strings, a pickup, and a wireless audio transmitter. Jumping on the pogo would taught the bass strings, causing them to vibrate. The audio would be sent wirelessly via an audio transmitter, and received outside of the pogo stick and amplified.

The third type had a pressure sensor and bluetooth mechanism housed in it to transmit data to a computer. A computer running Max M.S.P. translated this pogo stick’s pressure data into sound. The audio originally sounded much like a Theramin, but was treated with various distorting effects to complement the timbre of the other pogo sticks. The latter two types of pogos were more delicate; during the performances, these were not jumped on, but played as an instrument by controlling the piston height.
The Antmaster

The Antmaster is an experiment in hybridizing dynamic media (projections) and static media (paintings) with an amplified audio track in order to construct a visually – and audibly – enlarged ant farm. Digitally projected images of live ants are superimposed over painted surfaces to achieve a new amalgam of motion and still images. In addition, I recorded nanosounds of ants moving and communicating in a nanoscience lab to act as a soundtrack to the pieces – sounds we seldom remember to think about as observers of the natural world.

The first incarnations were presented on a storefront in the heart of Westwood, LA. The store windows were converted into projection spaces for two iterations of the piece.

Footage was taken with a computer screen situated behind an antfarm. The clip was looped and projected onto windows that were painted with a thin layer of white tempera paint. Once the tunnel areas were visible, the paint was removed from under them, and replaced with a black layer. The resulting projection has extremely crisp black areas, normally unattainable through conventional projection methods.
Further incarnations were presented at the David Bermant Gallery in the Broad Art Center, LA. The main projection piece was similar to the Westwood piece, but projected on frosted glass. This raised the visibility of the projections, as it did not need the layer of white paint.
Two pieces were presented on canvas. I tried to hybridize projections with one of the most classic forms of static art – paint on canvas. These were projected from the front as opposed to the rear projected Westwood iterations.
In Antmaster Iteration 2d, “Hey Ladies” I juxtapose the ant’s habitat with their arch enemy, lady bugs (they eat aphids, which are in a symbiotic relationship with ants.) This was an experiment to find new habitation patterns for displaced organisms.

The tunnel areas from an ant farm were burrowed out of a sheet of gator board with a CNC milling machine. These tunnels were filled with lady bugs, then covered with a sheet of acrylic.
Iteration 3, shown on Hollywood Blvd as part of the LA Freewaves Festival, was presented on a storefront as a symmetrical projection piece. There were two projectors used for the installation, the image flipped horizontally on one. The projections matched the alternative mood of Hollywood Blvd.; the double projections adding an eerie duality to the already surreal presentation size of the ants.

Iteration 4, presented at the CNSI Art | Sci Gallery adds a new theme to the Antmaster – the laws of karma. Eastern religions (Hinduism, Buddhism, etc,) explain karma as a sum of one's actions that determines one's next reincarnation. Only after much spiritual practice and clearing of karma can one finally realize their “true self.” The ants symbolize the lifetimes of work put into clearing Karma. They are tunneling through layers of invocations that are meant to aid in the clearing of karma.
Ants were recorded in the UCLA nano technologies lab to act as a soundtrack to the Antmaster series. Ants were released on sensitive mics inside of a soundproof dome for electron microscopes. The resulting sounds of ants moving and communicating were used as samples to create the soundtrack composition.

In the Antmaster, I use insects as a collaborative force in creating an audiovisual piece. Instead of the artist, the ants decide how the piece should look – opening the piece to external input and chance. The ants are the “master”, and the artist the “slave” in creating the piece, hence the title “Antmaster.”
This is a screen based piece which I created with designer Jason Yang as the top page to my band Wiggle’s web portal.

Dragging and dropping the blocks on the bottom of the screen to the "drop here" box will subsequently navigate the user to the content pages. These blocks are also sound sample holders. A vertical line travels from left to right (in a loop) on the screen, signifying the playhead – any blocks in its path will trigger the audio sample housed in the block. The blocks may be situated anywhere on the floor, allowing for the user to use them as notes on a score. If they are thrown such that they are kept sliding on the floor, an ever morphing composition will be born.

The piece uses simulated gravity and solid body physics algorithms as the randomizing agent. The piece is “open” to Internet users across the planet, and creates a unique composition for each active participant.
Tracts is a kinetic sculpture in which the observer is allowed to blow or talk into a pig’s intestine encased in an acrylic tube. The sounds travel through the intestine (which acts as a natural resonator,) processed through various effectors and amplified. The irregularities of the intestine shape the sound differently every time, as it will unfold and inflate uniquely with each breath.

This piece is a rebellion towards the popular art scene which only considers marketable art as being a successful art piece. This attitude has been confining artists to create art which is static, maintenance free, and archival, forcing most media art to be out of the loop.

Tracts is deliberately volatile, lasting no more than two weeks before it starts to deteriorate – I try to spotlight the beauty of its vulnerability. I also hoped to disconcert viewers by using materials that may be considered grotesque – this again a defiance to the conventional art scene today, where flashy, cute, and visually palatable art objects are sought after.
CONCLUSION

Function \{random(x);\}
CONCLUSION

Realization of Key Objectives

1. Randomization

Through my “Decompositions” series, I hope to have cultivated some new techniques of integrating the “chance operation” and “randomness” into art.

Some randomizing factors I employed in the works are as follows:
Slinky Piece: Slikys’ cascading rhythms and the their engagement with the ladder.
Aerosol: The air molecules’ entropic dissipation from the can.
Composition 20/40: The chaotic cadences of a game of ping pong.
Pogophonic: The randomized pogo riding patterns that the performers displayed.
The Antmaster: Ant’s burrowing patterns and their communication protocols.
Tracts: The highly unpredictable resonant properties of a shape shifting pig’s intestine.
Wiggle Interface: Gravity and the solid body physics of randomly thrown objects.

Though I use different randomization factors in each piece, I had the same milestone – to demonstrate the beauty of entropic compositions. Seeing that my pieces have had positive reviews on various blogs (Julian Bleecker, We Make Money Not Art, etc.) and exhibited at various festivals (LA Freewaves, The Art of Digital, etc.) I can conclude that I may have had some success.

2. Sound and Process

I try to pose questions towards standardized compositional methodologies by offering unique alternatives to them.

I amplify the sounds in my work such that I not only make audible the original timbre of the
objects, but also to illuminate my process of articulation. I feel this follows in some of the traditions of the ideologies of Charles Ives who favored sound and process over structure.

John Cage explained that in his works he tries to “let sounds be themselves rather than vehicles for man-made theories or expressions of human sentiments.” Though I read this statement after I started researching past references, I identify strongly with this philosophy. I do apply some effects to the sounds, however I feel I am leaving the essence and charisma of the original sounds intact.

3. Creativity and Mental Illness

Though there is a definite correlation between mental illness and creative inspiration, it is distressing for the artist to embrace the fact that one must be sick in order to articulate well.

David Cope’s algorithms presented us with the basic model to compositional creativity. John Cage gave us many examples to how we can bring indeterminacy into this model such that we can expand our horizons without having to rely solely on our brain’s dysfunctions. I hope that I also have been able to offer some alternative methodologies in using “chance” through my “Decompositions” pieces.

The Future

In the last three decades, personal computer technologies have acted as the catalyst for new creativity in the art world. Computer aided composition, print, and fabrication techniques have come about, drastically changing the way we create art. Together with the “chance operation” methodology embodied and popularized by Cage, the computer becomes a powerful tool to aid in the articulation process.

Artists are now able to focus more energy on cultivating their creative vision rather than on

how to materialize it. Computers are able to allow artists to easily randomize and incorporate the “chance operation” into their creations. Multiple iterations of artist’s works are easily created, allowing us to find more facets and trajectories in our own works to experiment with. The creative process of “Envision → Create → Experiment → Select → Present” is much easier to execute, especially with computers helping to reduce the time in “creating” and “experimenting” (e.g. David Cope’s 5000 Bach Chorales.)

We have come to a point where we do not have to rely solely on our own brain chemistries (or chemical imbalances of) to come up with the piece of “genius inspiration.” We can have computers iterate and reiterate, until it comes up with the “beautiful accident” (as designer Joshua Davis likes to call it.) The artists’ role now is more one of the “director;” he/she must be able to discern which accident is the “beautiful” one, and present it in its proper light.

In future “Decomposition” works, I hope I can make more use of the computer to allow for

indeterminacies in the compositions. However, it is difficult to envision processes occurring within the a computer, as its computations are silent, invisible, and mysterious for most. Since I am an advocate of showing the nuts and bolts of a composition’s processural elements, I plan to be careful with introducing the computer into the equation. In future pieces that make more use of the computer, I will be sure to keep the compositional (and computational) process highly visible.

I feel extremely grateful as an artist being able to live and create art in this age. At the same time, I realize the responsibility as well, as the cultural blueprints for technological revolutions are usually drawn out within the first few decades. Old methodologies no longer apply, and new possibilities are appearing as fast as the computer industry is evolving. Artists must be keener than before in unlearning the old, inventing new processes of articulation, and knowing when to stop.

“When we separate music from life what we get is art.”

John Cage

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