“331321223211”: The Interplay of Chance, Choice, Intuition, and Logic

In twentieth century America, the role of the composer was changing drastically, from dictator to facilitator. Composers were recognizing the inherent indeterminacy of notation and performance, as well as the long standing trend in the European musical tradition of the composer as dictator, specifying further and further what the performers and the instruments should do to arrive at a realization of the composition. Henry Cowell and his contemporaries looked at nature’s manifestations of sonic possibilities and drew from them new ideas for how music should be composed resulting from the scientific properties of sound. These early explorations invited extramusical considerations and shifted the task of arranging resources slightly further outside the (probably conservatory trained) composer’s mind. Dana Rudhyar introduced analogical considerations, such as how relationships between tones (consonance-dissonance spectrum) can be thought of as social relationships are, reconcilable over time. The minimalists later made psychological considerations, repeating passages using smaller sets of material many times in order to allow listener’s to glean deeper understanding from repeated exposure. All of these approaches though, from passage to passage in a musical composition, still tend to rely on the deliberate and specific musical decisions of the composer, across the musical elements he chooses to employ.

Before the last group mentioned, the minimalists, there were those interested in chance and indeterminacy in music. As John Cage points out about Bach’s “Art of the Fugue” among other works of the past from Europe, indeterminacy plays a role in these too (Cage 35). Whether he makes choices after deliberately considering musical minutiae, or flips coins or uses a computer program as I did in a work to be discussed

later, the composer is choosing the boundaries, deciding on their placement to frame the possibilities of musical activity. Paul Alan Levi once said in an email to me, “every time Beethoven uses a fermata, he is taking a chance”. In the mid 20th century, composers John Cage and Morton Feldman among others chose to use chance as a method of generating musical material, removing the ego and the highly specific intentions of the composer from the creation of the musical work. Most or all of their aleatoric works, however, used chance throughout after determining the boundaries and divisions of particular musical elements by choice. In my composition to be discussed shortly, I have used chance to determine broadly if chance or choice or a mixture of the two will be used per passage, the mixed approach being that certain musical elements are determined by choice and others by chance in a given passage. There is also a passage reserved for special discussion in which I make choices instantaneously, severely reducing the time of deliberate thought if it can even be called that, which nears the idea of chance from an internal source (my brain) rather than the usual external sources (coin flips, computer programs, random or not fully predictable natural processes, etc). What follows is a discussion of the predetermined choices I made in composing “Chance Vs. Choice vs. Human, a Bloodbath with a Multilayered Scope of Rules”, as well as the procedures for constructing chance passages and reconciling them with the choice passages in between.

Explanation of Predetermined Choices

The predetermined choices in this composition are largely derived (by chance I suppose) from the conditions of my working environment during the time I spent composing this piece and planning its performance. Talking to various performers I'm acquainted with during this characteristically busy spring semester, I found one willing to and capable of performing a chance piece, and available on one of the dates/times allotted for presentations. I spoke with him about what he could handle, given about a month of preparation time, and he requested that I not use tempo changes and not use complex effects requiring someone to deal with sound equipment and the two of us to have to find it. I also recognized on my own that any interesting chance algorithm would violate musical conventions such as proper metric divisions of the beat, and with the other elements in general, a small set of possibilities would still generate a large and vastly complex set of musical gestures determinable by chance or choice. Finally, for a form I decided to borrow from Terry Riley's "In C", choosing by 90% survival rule, 12 passages to be repeated 1-12 times. Since chance can produce music quite unlike the deliberately chosen, I thought this would benefit the audience in allowing them more time to absorb each passage, or hinder them by allowing less, which varies the possible psychological experiences widely.

In summary the predetermined choices are:

# of gestures/"measures" = 12 Decided by chance, by "90% chance of survival rule". The 90% survival rule means that after each passage I compose, there is a 90% chance I will compose another one. This led to 12 passages being composed.

# of repetitions = between 1 and 12.

Constant tempo = quarter note = 76. This was determined by chance from the range of 50 to 150 in order to ease performability.

Harmony = Melody. The composition is for bass, so even single lines are often perceived as root notes of harmony. Distinguishing between melody and harmony strictly also does not allow for arpeggiation.

In case of nonsense or musical/performance impossibility: do not play passage or segment of passage, rest and contemplate.

In general, I use small sets of possibilities which can already generate very complex passages, in order to not overwhelm the performer.

A final important comment: I hereby acknowledge that all the chance procedures involve sets of parameters chosen by the composer.

The Chance Procedures

To make chance decisions, I enlisted the services of RANDOM.ORG, which uses measurements of atmospheric noise to generate random data sets. From this website I generated random sets of integers and mapped them to the different possibilities enumerated below in order to choose which of them would apply to a given passage. I asked the following questions in musically and logically relevant order.

1. Choice, Chance, or Mixed? (1, 2, 3)

<u>if Choice Passage</u>

Do whatever I want

<u>if Mixed Passage</u>

1. Choice or Chance Harmony for this Passage?
2. Choice or Chance Rhythm for this Passage?
3. Choice or Chance Dynamics for this Passage?
4. Choice or Chance Timbre (Range) for this Passage?

2. **For each element that is determined by chance, proceed to relevant questions in chance section (following).**

if Chance/Mixed Passage

Rhythm/Meter Questions

How many beats in this measure/passage? (1-7)

What note value is one beat?

How is this beat divided? Flip coin, heads to keep division options. Q, 8th, triplet 8th, 16th.

What note value is this note?

Harmony (Melody) Questions

Which note is the root of the chord?

How many notes? (1-5)

Repeated Intervals Vs. Mixed Intervals?

Which Interval? (m2, M2), m3, M3, P4, tritone, P5, m6, M6, m7, M7, octave? (for mixed ask repeatedly, for repeated, ask once)

Up or down?

Dynamics Questions

pp, p, mp, mf, f, or ff?

Crescendo, Diminuendo, or Constant?

Articulation Questions

Legato or Staccato? (note for note)

Range/Timbre Questions

(bass written range is E2 to Ab4)

Which string? E, A, D, G

Which octave? 1 or 2?

Final Question

How many times will this gesture be repeated? (1-12)

SEE APPENDIX A FOR CHANCE DETERMINED PASSAGE NOTES AND COMMENTARY ON CHOICE DETERMINED PASSAGE ELEMENTS.

Historical Context of This Work

Henry Cowell and the Division of the Musical Compound into its Choosable and "Chanceable" Elements

The historical context of the work was discussed broadly and briefly in the introduction, and will now be elaborated upon with more specific examples of the ideas of John Cage, Morton Feldman, Henry Cowell, and Steve Reich, that aesthetically and intellectually informed my composition.

At initial consideration, Henry Cowell would not have seemed to me to have a lot to do with aleatoric composition. However, I quickly discovered otherwise upon realizing that in order to compose chance music, I would have to choose categories from the outset to leave to chance, and within these categories set boundaries and specify points on the spectrum of each element that would represent chance possibilities. Hesitant to construct my own treatise on each of the musical elements as I understand them, I turned to Henry Cowell's "New Musical Resources" for ideas, with which I felt free to disagree. I expanded or contracted some of them for aesthetic and/or practical purposes.

Cowell divided harmony into three categories: thirds and sixths, fourths and fifths, seconds and sevenths (Cowell 112). He considered chord extensions beyond the triad to come from polychords. For example, the C major seventh chord (C-E-G-B) is C major + E minor (C-E-G + E-G-B = C-E-G-B) (Cowell 114). For the rest of possible harmonies, he considers adding major or minor 2nds to the end of, or within the chord to create

tone clusters (p. 116) He also briefly discusses the role of inversions and harmonic motion of chords and clusters. I do not necessarily object to any of his ways of organizing and enumerating the options on the menu of his contemporaries, but it introduces a number of stages and predetermined factors that restrict the freedom of a chance composition. It would require deciding a repeated interval pattern rather than allowing for mixed intervals, so instead I did allow for mixed intervals. It also identifies a system in which the harmony is to be understood, and discusses tonal functionality, which imposes a large scale and old-fashioned restriction on a set of chance possibilities if I were to adhere to Cowell's reasoning.

Many sophisticated ideas about rhythm, and time in general, were presented in "New Musical Resources". Cowell arbitrarily uses the sixteenth note as the basic unit, the "C" of rhythmic language in order to discuss meter, the patterned organization of accents (Cowell 67). He builds rhythms up rather than breaking them down (Cowell 66). I used fairly simple rhythmic values for reasons stated earlier, and to maintain a steady pulse I used the quarter note as the single beat in all passages. However, in an elementary way I did find Cowell's relation of harmony and meter useful (Cowell 72). Since I used one harmony per meter, I restricted the numerator of any meter to integers between 2 and 7 inclusive. Harmonies were also restricted to a small number of notes. While the chance procedures allowed deviation quite far from the emergence of obvious functionality of individual chord components, the small parameters did allow for the privileging of certain chord components based on their rhythmic value, metric placement, and articulation within the arpeggios. In this way and many others, Cowell's ideas informed my understanding of the blending of musical elements in characterizing

any particular passage. The emergent properties therein can and do happen by choice and/or chance in any composer's work, which connects Cage, Feldman, et. al, as well as my work to the past Western tradition in ways we might not want to admit.

In my composition, I considered articulation separately from dynamics in leaving it to chance. Contrarily, Cowell says "it is assumed there will be theoretical accents of heavy stress on the first beat of any measure, light beats in unaccented portions of the measure, and perhaps medium stress applied to secondary accents within the measure. This gives only three different shades of dynamics" (Cowell 81). He goes on to then indicate the other commonly used five. These last five are the ones that the composer must insert as dynamic markings. The performer is then left responsible for the dynamic variety subtler than these markings indicate (Cowell 81). Again a theme may be emerging, in that I used dynamic possibilities beyond what supported or enhanced typical accent patterns or melodic contours like Cowell mentioned. I made sure of this to give my chance composition the push beyond what is often chosen, which would make it hard to suspect that my piece was partially composed by chance.

As for the discussion of timbre, Cowell enmeshes that in the context of other musical elements in complex ways that are beyond the scope of my work. Due to lack of other resources and infinite time, I composed my piece for solo bass, and the timbral variety comes primarily from range.

John Cage, Morton Feldman, and the Aesthetics of Chance Composition

In most definitions of “composition”, overgeneralized and oversimplified as they are, the word “deliberate” or some synonym of it is present. John Cage instead defines composition as a process involving four elements including itself: structure, form, method, material, and composition. He defines these, paraphrased below, in his collection of essays entitled “Silence”:

- Structure - divisibility into successive parts from phrases to long sections.
- Form- the content, the continuity.
- Method- The means of controlling the continuity from note to note.
- Material- Sound and Silence.
- Composing- integrating the materials, sound and silence. (Cage 62)

These definitions did not necessarily inform my compositional process, but they are relevant in two ways. First, upon combining them in various ways and then into the whole of “composing”, one can see that they do not require a particular degree of specificity of intentions or attempt at control of the musical gesture or set of musical gestures. This allows for the role of chance in a way that other definitions of composition do not necessarily. Secondly, it mentions silence, which is also the title of the collection of essays. Cage took his own interest in silence, or his idea that it did not really exist as conceived by others. In embarking on my own attempt to write a chance composition, I discovered another role of silence. I did not include the option of silence as a member of

any of my sets of parameters. Instead as in passage 8 of the composition, I indicated that the performer should refrain from playing, and instead rest and contemplate the impossible and/or nonsensical nature of the passage. In the case of passage 8, it is a crescendo from the chance determined dynamic level of forte to that of piano.

Besides noting Cage's definition of composition, and finding a conceptual use for silence as he did in a different way, I was very influenced by Cage's aesthetic and philosophical ideas, which is why I chose to compose this piece. Cage stated once about a conversation he had with Morton Feldman:

"One evening Morton Feldman said that when he composed he was dead; this recalls to me the statement of my father, an inventor, who says he does his best work when he is sound asleep. The two suggest the 'deep sleep' of Indian mental practice. The ego no longer blocks action. A fluency obtains which is characteristic of nature" (Cage 37).

It amuses me that in this context I am saying that Cage influenced me. Influence can come either from being humbled or inspired by a particular experience. In our social world, this is often what someone says or how they react to a composer's work. The ego causes a composer to compare his/her work, which is often his deliberate and painstaking set of decisions within a context, to that of others and maintain a catalogue of how others react, how much he/she cares what they think, and where he/she stands among his/her musical peers and how he/she is perceived by the audience that will or will not support them in the future. This coupled with a quest for independent artistic

integrity and uniqueness puts a composer on trial during all of his activity. Cage's father claimed that sleep generated ideas, during dreams, without the interference of the ego. This is because we do not intend, or think we intend every occurrence in a dream, as lucid as some are. When I read this section, I realized that sleep is the intersection of choice and chance. Our dreams are confined to our brain's catalogue of experiences, but are often unrealistic and are not exclusively recollections of past events in our lives, but extend to emergent properties of our mental models derived from these real experiences.

The idea of sleep is relevant to passage #9 in my composition, as passage 9 was determined by chance to be one of the choice passages, but I chose things instantaneously without allowing time for deliberate thought or extensive musical reasoning of any kind. This is analogous to the lack of control of thought patterns in a dream. So it is partially natural and determined by chance, but does originate spontaneously from my collection of mental models of organizational units in music, rather than from an external chance decision making source.

On another subject, my comments about the discrepancies between Henry Cowell's approach and the results of chance music sharply contradict a view of Cage's. Morton Feldman offers support though. Cowell thought that music should reflect how sound emerges from nature, and so did Cage, saying that "Process should imitate nature in its manner of operation" and further developing that point to say "Everything is music." Feldman contests, "Just as there is an implied decision in a precise and selective art, there is an equally implied decision in allowing everything to be art." It is this idea that my composition is meant to explore by way of subjecting different levels of

dividing music up into its elements to chance or to choice, rather than just doing that to the work as a whole, or any entire musical passage horizontally placed within it. Feldman might be upset with me too though, I am unsure of his degree of insistence that everything be left to chance, or his opinion that this is possible, but he finishes off Cage, saying “Faced with a mystery about divinity, according to the riddle, we must always hover, uncertain, between the two possible answers. Never, on pain of losing our own divinity, are we allowed to decide. My quarrel with Cage is that he decided. A brilliant student of Zen, he has somehow missed this subtle point” (Feldman 30). I of course think that rather than dichotomizing choice and chance, we should recognize their interplay and experiment with it by enumerating it from different sets of predetermined conditions. That is my intention with this particular work. I begin with norms and set up a procedure for deviations from them, some of which I am conscious of and others of which I am not. Feldman supports me here too, as Tom Johnson quotes him as follows: “Music can imply the infinite if enough things depart from the norm far enough. Strange ‘abnormal’ events can lead to the feeling that anything can happen, and you have a music with no boundaries” (Johnson, *Remembrance* 1987).

Summary of Intentions (Conclusion)

I find that whenever someone talks or writes about a musical composition or any other idea presented in a final form in some other medium, over-generalizations arise. The speaker or writer faces this plight whether or not the over-generalizations are actually present in his/her thought process. The dichotomization of choice and chance, in their definition as well as the very general level at which they have been applied in the arts, is an example of this. To dispel these I tend to turn to mathematical logic, as it has innumerable hierarchical levels of organization that language has not yet achieved. Language and other forms of non-quantitative labeling may never achieve that. They do not necessarily even need to, given the strongly limited human working memory. Language, spoken or musical, seeks to communicate and is therefore restricted to human perceptual and cognitive limits in a way that can only be overcome by systematic rebellion. So is mathematical, but less so since it doesn't aim to communicate to a wide audience necessarily, which is why I used it. When composers move past perceptual and aesthetic considerations to philosophical ones, they have to go outside the language of music for answers.

With my amendments to and samplings of Cowell's ideas, and further specification and integration of the elements to be subjected to chance and choice following the processes established by Cage and Feldman, I arrived at two overarching principles behind the composition of "Choice vs. Chance vs. Human: A Bloodbath with a Multilayered Scope of Rules". The two principles are division and interspersion: the

division of musical gestures into elements of varying degrees of specificity determined by choice or chance, and interspersion among one another in whatever is determined to be the standard musical unit. In my case it was the “passage”, which was chosen to be a single measure of varying length. This procedure creates a mathematically comprehensive and awesomely fecund approach to the style of composition that involves the interplay of choice and chance.

Appendix A

Passage 1 (repeat 10 times)

Mixed

Rhythm = Choice = 3 beats, QQQ

Time Signature is 3/4

The time signature was chosen arbitrarily and the rhythm was chosen for simplicity and lulling effect to complement the dynamics and articulation to gently begin the piece.

Harmony = Chance

How many notes? = 3

Repeated Vs. Mixed Intervals = Mixed

First note = G#

Second Note = up to F#

Third Note = down to E

Dynamics = Choice = piano constant

The dynamics were chosen to complement the rhythm and articulation in gently lulling the listener into the experience.

Articulation = Choice = legato

The articulation was chosen to compliment the rhythm and dynamics in gently lulling the listener in with long notes.

Timbre/Range = Chance

G string, high half

Passage 2 (repeat 9 times)

Mixed

Rhythm = Mixed. # of beats by chance. Note values choice. 3 beats, QQ(EE)

Since the chance procedure yielded three beats again, I chose a slight variation of the first rhythm in order to slowly begin the rhythmic progress.

Harmony = Mixed

How many notes? (Chance) 2

First note? (Chance) Eb

Second note? (Choice) down to Bb

I chose the second interval as Bb for the strength of the interval created.

Dynamics = (chance) piano crescendo to mezzo piano

Articulation = (Chance) staccato

Timbre = (Choice) G string, high half.

I chose this timbre because I did not want to vary timbre yet.

Passage 3 (repeat 7 times)

Choice

This passage was chosen holistically with the intent of using dynamic contrast and breaking down rhythms without obscuring downbeats to create organized chaos.

Passage 4 (repeat 8 times)

Mixed

Rhythm = Mixed. # of beats by choice. Note values by chance. # of beats = 3. Note values = EEQQ.

These note values reverse those in passage 2 and connect 2 and 4 together since they have the same number of beats and these reversed rhythms.

Harmony = Chance

Repeated vs. Mixed = Mixed

First note: Ab

Second Note: Db below

Third Note: F below

Fourth note: Db below

# of notes in harmony: 4

Mixed intervals. Root + down P5 + down m6 + down M3 (***impossible, so rest***)

Dynamics = (chance) Constant forte

Articulation = (mixed) staccato, staccato, legato, legato

chose legatos to contrast with first two staccatos and solidify ending of passage.

Timbre = Mixed. G string first half + D string second half + D string first half + G string second half

Chose middle two in order to create palindrome of G, D, D, and G strings.

<u>Passage 5 (repeat 4 times)</u>

Chance.

Rhythm = 4/4 time signature. QQQS8S.

Harmony

Repeated vs. Mixed = Repeated. Down M2.

First note: Eb

Second note: **Db (Impossible in area of string determined by chance)**

... down whole steps ***B (IMPOSSIBLE TO GO DOWN ON HIGHER STRING)***, ***A (impossible)***, ***G (impossible, not in first half)***, ***F (impossible, not descending), Eb (impossible, not descending).***

# of notes in harmony = 8

Dynamics

Constant mf.

Timbre/Range

D string first half, E string first half), G string first half, D string second half, G string first half, A string first half, D string second half, A string first half.

Passage 6 (repeat 4 times)

This passage was chosen holistically to bring odd collection of intervals together via chromaticism and sharp distraction from the original metric groove.

Passage 7 (repeat 11 times)

Chance

Rhythm

2/4 time signature. SSQ8.

Harmony

Repeated vs. Mixed = Mixed

First note = C **note not in correct half of string, impossible**

Second Note = up to B

Third Note = up to Eb **note not in correct half of string**

Fourth Note = down to D

# of notes in harmony = 4

Dynamics

Constant forte

Articulation

Staccato, Staccato, Legato, Legato

Timbre/Range

E string second half, D string second half, E string second half, A string first half

<u>Passage 8 (repeat 3 times)</u>

Chance

Rhythm

Time signature = 6/4. 888S8Q8S(TTT)Q

Harmony

Repeated vs. Mixed Intervals = Repeated

First note = Bb **impossible, incorrect half of string**

Second Note = up to G **impossible, incorrect half of string**

Third Note = up to E

Fourth Note = up to C#

Fifth note = up to Bb **impossible in that direction**

Sixth note = up to G **impossible in that direction**

Seventh note = up to E **impossible, wrong half of string**

Eighth note = up to C# **already on this note, up 0 steps, cycle complete once.**

Ninth Note Up to Bb **impossible, note too high for string assigned.**

Tenth Note = down to C#

Eleventh Note = up to Bb

Twelfth Note = down to C#

Interval = M6

# of notes in harmony = 12

Dynamics

crescendo from f to p **impossible, so this passage is silent!**

Articulation

legato, legato, legato, staccato, legato, staccato, legato, legato, staccato, legato, legato, legato

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Timbre

E string second half, D string second half, E string first half, A string second half, A string first half, G string first half, G string first half, A string second half, E string second half, E string first half, G string first half, D string first half.

<u>Passage 9 (repeat 8 times)</u>

Rhythm

Chance

Time signature = 2/4. QSS8.

Harmony

Mixed or repeated intervals: repeated.

Interval: M3

# of notes in harmony = 4.

First note = C

Second note = E

Third note = G#

Fourth note = C

Dynamics

Mixed

Choice beginning = diminuendo from mf to...

Chance ending = pp.

Articulation

Chance

legato legato legato staccato.

Timbre/Range

Chance

In this passage I chose chances or chanced choices, meaning I decided without musical contemplation, as if throwing at a dartboard, when given a choice. The purpose of this was to demonstrate a neurological intersection between chance and choice that is always present in human decision making.

Passage 10 (repeat 4 times)

Chance

Rhythm

Time signature = 4/4. Q8Q8Q.

Harmony

Repeated vs. Mixed Intervals = Repeated.

Repeating Interval = up P4

First note = G

Second note = C

Third note = F **impossible in position required.**

Fourth Note = Bb **impossible in position required.**

# of notes in harmony = 4.

Dynamics

mp crescendo to mf

Articulation

legato staccato legato staccato

Timbre/Range

First half of E string, first half of A string, second half of G string, second half of D string.

Passage 11

Passage 11 serves the holistic purpose of disrupting the listener's familiarity with the range, bringing the harmony to a single note far away from previously remembered once, and using rhythm and increasingly extreme dynamics to begin the dynamic sprint to the finish line.

Passage 12

The dynamics reach an endpoint here at fortissimo, and the final repetition of G forces the listener to accept this as a resolution as it is in a different range from the other recent notes and is reinforced by the repetition. This produces a cadential effect without the need for tonal harmony relationships.

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