

### *preliminary thoughts*

The following text is a 'musical letter'. Performance instructions for the guitar and optional trombone parts are provided following the text of the letter. Also included is a Spanish translation of the text by Nicolás Carrasco Diaz. Note that while the letter includes a name in the valediction and was originally recorded with the name spoken, the name should be omitted if spoken or recorded by someone else. That is, omit the name and proceed directly to the date. Different languages of the text may also be read in performance simultaneously.

Dear Greg,

As I mentioned in prior correspondence, in consideration of the upcoming celebration of Leibniz on the 300th anniversary of his death, I have immersed myself in his work; reading and rereading his texts as much as time allows. His oeuvre is so voluminous, that I fear even by the time we meet in November, I will have only scratched the surface.

I have been enjoying the fact that much of Leibniz's writings are in the form of letters. They are less precious, less formal in that way. As I prepare to write the piece for the celebration in Turin, I thought it would be nice to set my correspondence with you to music. As musical letters or studies of sorts. Ideas not yet fully formalized but worth expressing; both the text and the accompanying music.

I write this letter as an exposition of my preliminary reactions in hopes that the very articulation and expression of these thoughts will aid in their future formulation albeit as naive as they may be in their current state.

In Leibniz's writings, I have found several cogent threads that intrinsically (if not explicitly) relate to art and music. I will group them as follows even though they are all interrelated: combinatorics, harmony, aesthetics, structure, epistemological vs. practical limits, and free will.

#### 1) Combinatorics

I found Leibniz's dissertation entitled "On the Art of Combinations" of particular interest. Perhaps because it is an early work; laden with mistakes yet sound in its conception. But more likely because of explicit references to the application of combinatorics to music. Although it was written for his studies in jurisprudence, it is humbling that it can apply to so many other domains.

My composer friend Tom Johnson first showed me the 6th of 12 problems from the dissertation last summer though I was unaware of the source at the time. In the problem, Leibniz tries to count the number of 6 note melodies that can be sung with 7 possible pitches. He classifies them by the number of repeated elements. That is, he was trying to give a solution for the number of tuples and permutations with prescribed repetitions.

Earlier in the dissertation, he also discusses the application of combinations from problems I and II to organ registry and counts the number of possible timbres that an organ with a certain number of stops can sound (i.e., all subsets of the stops). In this sense, Leibniz predicted over 300 years ago musical ideas that are only now being explored by composers more thoroughly. Though there are important precedents. Bell-ringing traditions come to mind and also the music of Bach, of course. I like to think that there was a sort of intellectual resonance between Leibniz and Bach based on the fact that they lived near each other at the same time. I am also curious if Bach might have been alluding to the title of Leibniz's dissertation in the *Art of the Fugue*.

## 2) Harmony

While I have yet to find a full version of Leibniz's letter to Christian Goldbach, I have found the following translated excerpts:

"All our usual intervals are ratios based on two of the prime numbers, 1, 2, 3 and 5. If we were endowed with a little more subtlety, we might arrive at the prime number 7. And actually I believe the following ones are also given. Thus the ancients did not openly avoid the number 7. But hardly anybody proceeded as far as the following prime numbers, 11 and 13."

Then later in the letter he writes:

"I do not believe that irrational ratios are pleasing to the soul in themselves, except when they are very close to the rational ones which give pleasure."

Clearly Leibniz had a keen understanding of musical harmony. These are deep insights rooted in the Greeks yet only revived recently by composers such as Harry Partch and James Tenney. And indeed, as Leibniz predicted, composers are starting to more thoroughly explore harmonies based on higher prime numbers; what Tenney calls extended harmonic spaces with higher dimensions.

The second quotation might refer to the interleaving of dissonances with consonances as is common in chordal progressions within the rubric of functional tonal harmony. However I prefer another interpretation: that Leibniz is suggesting what Tenney calls "tuning tolerance"--the idea that the brain resolves irrational harmonies to the nearest simplest set of frequency ratios.

Admittedly, I have yet to follow this thread in Leibniz's writings to further extent but hope that I can find more texts that refer to harmony and harmonic constructs.

## 3) Aesthetics

It is hard to fully understand Leibniz's thoughts on the perception of beauty. He often alludes to the concepts of good and bad with respect to music and art, which I disagree with. In my mind, absolute beauty does not exist. People who believe in it are actually referring to status quo bias where the status quo is the current popular opinion. That is, if someone deems something as universally bad, it actually means that it is against the status quo with which they are in agreement. Whether or not, and how, someone appreciates beauty must be subjective even though biases will arise, especially within cultures. I have theorized in the past what can bring about a person's opinions with respect to if and how they appreciate something they perceive and why this can differ from person to person. I can even demonstrate it in terms of Algorithmic Information Theory, but I will leave that for a later time and remain focused for now on where Leibniz and I align.

In both his "Discourse on Metaphysics" as well as "Meditations on Knowledge, Truth, and Ideas", Leibniz discusses the concepts of "clear" and "confused" knowledge. The latter is of particular interest to me. To paraphrase Leibniz with my understanding of the concept: confused knowledge is the ability to perceive something as distinguished from other things yet unable to express the properties which give rise to its distinction. I sometimes tell people that music often interests me when I know that there is some underlying process even though I cannot identify or properly articulate exactly what that process is. I refer to this as the "incalculability of concept-to-percept-transparency", which is the inability in art to know to which extent someone can deduce the concept of a work from the perception/experience of it.

#### 4) Structure

Leibniz's discussion on the relation of parts to other parts and to the whole (an example of which I will give later with respect to epistemological vs. practical limits) is almost found verbatim in the composer John Cage's definition of structure. However, Leibniz had even more radical thoughts pertaining to structure. As you have pointed out in your writing, Leibniz basically predicts Algorithmic Information Theory with the following quotation from his "Discourse on Metaphysics":

"If someone traced a continuous line which is sometimes straight, sometimes circular, and sometimes of another nature, it is possible to find a notion, or rule, or equation common to all the points of this line... When a rule is extremely complex, what is in conformity with it passes for irregular... But God has chosen the most perfect world, that is, the one which is at the same time the simplest in hypothesis and the richest in phenomenon."

This statement is essentially synonymous with the fundamental tenet of Algorithmic Information Theory: that you have structure if the computer program that generates a given object is smaller in bits than the object itself. It is this idea perhaps more than the others that I would like to follow as thoroughly as possible in Leibniz's work to better understand its genesis.

#### 5) Epistemological vs. Practical Limits

In the dissertation, Leibniz writes:

"The concept of parts is this: given a plurality of beings all of which are understood to have something in common; then, since it is inconvenient or impossible to enumerate all of them every time, one name is thought of which takes the place of all the parts in our reasoning, to make the expression shorter. This is called the whole. But in any number of given things whatever, even infinite, we can understand what is true of all, since we can enumerate them all individually, at least in an infinite time. It is therefore permissible to use one name in our reasoning in place of all, and this will itself be a whole."

Similar to how Leibniz was interested in an alphabet of human thought and the lexicon of a universal language, making art is often about defining elements and how they are (or can be in the case of a more open work) arranged. And just as it is inconvenient to enumerate through all subject-predicate pairs for a universal language, so too is it often difficult, if not altogether impossible, to enumerate all possible musics made from a given set of musical elements. I often find that the musical concepts that I envision in the compositional process quickly spiral out of control in the same way that their more abstract mathematical analogs in combinatorics explode exponentially. But where does the inspiration come that guides the artist to limit the material and order it in a particular way? Here Leibniz's faith in God guides him. Much of his work references the perfection of God's creation and the dissertation itself starts with a proof of God's existence. But this is all in search of truth and clearly he is seeding the idea of a universal proof checker. That is yet another thing that amazes me about his thought process. Almost as aside, he invents new fields of mathematics or prophesizes concepts that are only proved or disproved much later.

This rift between the limits of knowledge and the limits of practicality also occurs in Algorithmic Information Theory. Beyond the paradox of not being able to find a minimal program with certainty, just finding a program that outputs a given result at all is exhaustive beyond our computing means today. I dream of a world in which all my ideas would be computable.

## 6) Free will

The rift I discuss above also gives me a great deal of faith in intuition and inspiration. And that my intuitive decisions are the very computations I am interested in making with machines. But what is choice? Leibniz believes that all true predicates are contained within a given subject. This is yet another idea where Leibniz and I have independently aligned if I interpret his thoughts correctly. I believe he suggests that because you are unaware of the future, despite its containment in the subjects of the world, that whether or not there is free will does not matter. I have referred to this as the "illusion of choice" in my own writing. And suggest the very same thing I interpret in Leibniz: that in any world, determinate or not, there is no difference between choice and the illusion of choice.

Then finally, there is love, which I believe must be intrinsically linked to art and creativity. I now know how real love is and how inspired I am by my love for others. Just as art is a "confused" knowledge, so too is love. My body and my senses inform me of its presence and of its loss from another, but my mind cannot explain the reasons for these visceral distinctions. I imagine Leibniz has somewhere discussed what I now understand... that all I do is for love... and that every ounce of my creative energy is for that love to be reciprocated.

With Best Regards,

Michael Winter (Los Angeles; January 23rd, 2016)

*preliminary thoughts*

speaker, guitar, electronics, and optional trombone / sustaining tones

**Structure:**

The guitar part is played throughout starting and ending alone for at least 2.5 minutes. The reading of the letter and accompanying electronics part occurs directly in the middle of a performance and is bound by a noise swell before and after the reading (yet not sounding during). Both the crescendo and diminuendo portions should be at least 2.5 minutes resulting in the letter starting at least 5 minutes into the performance and stopping at least 5 minutes before the end of the performance. Thus, the structure as a whole is as follows:

guitar -----  
noise swell (crescendo) -- letter with electronics -- noise swell (diminuendo)

**Guitar:**

Except for the lowest string, the guitar is tuned to subharmonics of the high E-string (given below such that the 1st harmonic is the open string and the 2nd harmonic is at the 12th fret).

- I – standard high E
- II – tune the 3rd harmonic to the 2nd harmonic of I
- III – tune the 4th harmonic to the 3rd harmonic of II
- IV – tune the 5th harmonic to the 4th harmonic of III
- V – tune the 6th harmonic to the 5th harmonic IV
- VI – tune the 3rd harmonic to the 2nd harmonic of IV

Throughout, the guitar repeatedly plays the strings successively in descending order always sounding the 2nd harmonic. While allowing the strings to ring as long as possible, the durations between tones should always be 1, 2, 3 or 4 times a unit duration of between 1/6 to a 1/3 of a second. That is a 6-tuple of the set {1, 2, 3, 4} where the numbers are multiples of the unit duration. The iteration of 6-tuples should avoid repetitions to the extent possible such that as many different sets of durations is heard. Included below is a score realized in a quasi-tablature notation. The numbers indicate the multiplier of the unit duration as opposed to the fret number assuming that the 2nd harmonic is always played on each string. A subtle addition of resonance can be applied with electronics.

**Optional Trombone / Sustaining Tones:**

During the noise swell and the reading of the letter, long swelled sustain tones can be sounded occasionally such that a harmonic of the sustained tone slightly beats with a harmonic of one of the strings of the guitar (that is the pitch should be an octave equivalent of a harmonic or subharmonic of one of the guitar strings).

**Electronics:**

Apart from the noise swell described above, the electronics part that occurs over the reading of the letter consists of a flickering of combinations (triggered in a particular way) of a low sine-tone, a high sine-tone, brown noise, and white noise. The electronics should sometimes obscure but not ever completely overwhelm / make unintelligible the reading of the text. Included are two versions written in Supercollider: one where the letter is recorded and the other where the letter is read live. Both are commented in order to explain the functionality.

```

(
// main routine - version with recorded letter

// path to recording of letter - change accordingly
l = Buffer.read(s, "/home/mwinter/preliminary_thoughts/letter.wav");

SynthDef(\preliminary_thoughts, {
    var env, env_gen, hierarchical_dust, low_sine, high_sine, brown_noise, white_noise, letter;
    // structure: guitar played throughout
    // 2.5 >= minutes solo guitar
    // 2.5 >= minutes noise cresc.
    // letter with electronics
    // 2.5 >= minutes noise dim.
    // 2.5 >= minutes solo guitar
    env = Env([0, 0, 1, 1, 0, 0], [60 * 2.5, 60 * 2.5, BufDur.kr(l), 60 * 2.5, 60 * 2.5], \sin);
    env_gen = EnvGen.kr(env, timeScale: 1);

    // this triggers the combinations of sources
    // it is similar to the Supercollider UGen called dust but with a hierarchical structure
    hierarchical_dust = (
        TIRand.kr(0, 1, Impulse.kr(100)) *
        TIRand.kr(0, 1, Impulse.kr(10)) *
        TIRand.kr(0, 1, Impulse.kr(1)) *
        TIRand.kr(0, 1, Impulse.kr(0.1))
    );

    // adjust the multiplier at the end of each line for adjusting levels
    // note with each trigger, each source has a 1 in 3 chance of sounding
    low_sine = SinOsc.ar(76.midicps / 16) * (TIRand.kr(0, 2, hierarchical_dust) < 1) * 0.5;
    high_sine = SinOsc.ar(76.midicps * 8) * (TIRand.kr(0, 2, hierarchical_dust) < 1) * 0.03;
    brown_noise = BrownNoise.ar() * (TIRand.kr(0, 2, hierarchical_dust) < 1) * 0.03;
    white_noise = WhiteNoise.ar() * (TIRand.kr(0, 2, hierarchical_dust) < 1) * 0.01;
    letter = PlayBuf.ar(1, l.bufnum, env_gen >= 1, env_gen >= 1) * 1.4;

    Out.ar([0,1],
        ((letter + low_sine + high_sine + brown_noise + white_noise) * (env_gen >= 1)) +
        (WhiteNoise.ar(env_gen * 0.01) * (env_gen < 1)) // noise swell before/after text
    );
}).play;
)

(
// optional: use this to add subtle resonance to the guitar
// this can also be used with the version for letter read live below
// note that this does not mix the original signal

// string tunings for resonators
var str = Array.newClear(6); str[5] = 76.midicps; // E
str[4] = str[5] * 2/3; str[3] = str[4] * 3/4; str[2] = str[3] * 4/5;
str[1] = str[2] * 5/6; str[0] = str[2] * 2/3;
SynthDef(\guitar_resonance, {
    var resonators = Mix.new(CombC.ar(
        SoundIn.ar() * 0.25, (str[0] / 16).reciprocal, (str / 4).reciprocal, 10)) * 0.02;
    Out.ar([0,1], resonators);
}).play;
)

```

```

(
// main routine - version with letter read live

SynthDef(\preliminary_thoughts, {
    arg gate = 0;
    var env, env_gen, hierarchical_dust, low_sine, high_sine, brown_noise, white_noise, letter;
    // structure: guitar played throughout
    // 2.5 >= minutes solo guitar
    // 2.5 >= minutes noise cresc.
    // letter with electronics
    // 2.5 >= minutes noise dim.
    // 2.5 >= minutes solo guitar
    env = Env.asr(60 * 2.5, 1, 60 * 2.5, \sin);
    env_gen = EnvGen.kr(env, gate, timeScale: 1);

    // this triggers the combinations of sources
    // it is similar to the SuperCollider UGen called dust but with a hierarchical structure
    hierarchical_dust = (
        TIRand.kr(0, 1, Impulse.kr(100)) *
        TIRand.kr(0, 1, Impulse.kr(10)) *
        TIRand.kr(0, 1, Impulse.kr(1)) *
        TIRand.kr(0, 1, Impulse.kr(0.1))
    );
    // adjust the multiplier at the end of each line for adjusting levels
    // note with each trigger, each source has a 1 in 3 chance of sounding
    low_sine = SinOsc.ar(76.midicps / 16) * (TIRand.kr(0, 2, hierarchical_dust) < 1) * 0.2;
    high_sine = SinOsc.ar(76.midicps * 8) * (TIRand.kr(0, 2, hierarchical_dust) < 1) * 0.05;
    brown_noise = BrownNoise.ar() * (TIRand.kr(0, 2, hierarchical_dust) < 1) * 0.05;
    white_noise = WhiteNoise.ar() * (TIRand.kr(0, 2, hierarchical_dust) < 1) * 0.05;
    Out.ar([0,1],
        ((low_sine + high_sine + brown_noise + white_noise) * (env_gen >= 1)) +
        (WhiteNoise.ar(env_gen * 0.05) * (env_gen < 1)) // noise swell before/after text
    );
    SendTrig.kr(env_gen >= 1);
}).send(s);
}

(
// gui for triggering sections of the piece
w = Window.new("preliminary thoughts", Rect(200, 200, 380, 80));

~synth = Synth(\preliminary_thoughts);

b = Button(w, Rect(20, 20, 340, 30)).states_([
    ["press this to start piece", Color.black, Color.yellow],
    ["start letter when this turns green", Color.black, Color.red],
    ["press when finished reading", Color.black, Color.green],
    ["∞", Color.black, Color.red]]).action_(
    {arg butt;
        if(butt.value == 1, { AppClock.sched(60 * 2.5, { ~synth.set(\gate, 1); nil})});
        if(butt.value == 3, {~synth.set(\gate, 0)}));
    });

o = OSCFunc({AppClock.sched(0.0, { b.value = 2; nil});});
', '/tr', s.addr);

w.front;
)

```

*pensamientos preliminares*

traducción Nicolás Carrasco Diaz.

Querido Greg,

Como te mencioné en cartas anteriores, al considerar la próxima celebración de Leibniz a los trescientos años de su muerte, me he sumergido en su obra, leyendo y releyendo sus textos según me permite el tiempo. Su obra es tan voluminosa que temo que para el momento en que nos encontremos en noviembre, apenas habré rasguñado la superficie.

He estado disfrutando del hecho de que un cúmulo de los escritos de Leibniz están en forma de cartas. De esa manera son menospreciadas, menos formales. Mientras me preparo para componer la obra para la celebración en Turín, pensé que sería agreeable musicalizar mi correspondencia contigo. Como cartas musicales o suertes de estudios. Ideas aún no formalizadas pero dignas de ser expresadas, tanto del texto como de la música acompañante.

Escribo esta carta como una exposición de mis reacciones preliminares a la espera de que la sola articulación y expresión de estos pensamientos ayudará a su formulación futura sin importar cuán ingenuo sea su estado actual.

En los escritos de Leibniz he encontrado varios hilos convincentes que intrínsecamente (cuando no explícitamente) se relacionan con el arte y la música. Los agruparé a continuación si bien todas están interrelacionadas: combinatoria, armonía, estética, estructura, los límites epistemológicos versus los prácticos, y el libre albedrío.

1) Combinatoria

La disertación de Leibniz titulada "Sobre el arte combinatoria" me pareció de particular interés. Tal vez porque es una obra temprana, cargada de errores aunque acertada en su concepción. Pero me interesó más probablemente por sus referencias explícitas a la aplicación de la combinatoria en música. Si bien fue escrita para sus estudios en jurisprudencia, es aleccionador que pueda ser aplicada a muchísimos otros dominios.

Mi amigo compositor Tom Johnson fue el primero en mostrarme el sexto de los doce problemas de la disertación durante el último verano aunque desconocía su referencia en aquel tiempo. En el problema, Leibniz intenta contar el número de melodías de 6 notas que pueden ser cantadas con 7 alturas posibles. Las clasifica por el número de elementos repetidos. Esto significa que él estaba entregando una solución para el número de tuplas y permutaciones con repeticiones prescritas.

Antes en la disertación, también discute la aplicación de combinaciones de los problemas I y II a los registros del órgano y cuenta el número de timbres posibles con el que un órgano con un cierto número de registros podría sonar (por ejemplo, todos los subconjuntos de registros). En este sentido, Leibniz predijo hace más de 300 años las exploraciones musicales que solo ahora están siendo indagadas más exhaustivamente por los compositores. Sin embargo, hay importantes precedentes. Pienso en las tradiciones campaneras y también en la música de Bach, por supuesto. Me gusta pensar que hubo una suerte de resonancia intelectual entre Leibniz y Bach basada en el hecho de que vivieron cerca uno del otro en la misma época. Tengo curiosidad por si Bach habrá querido aludir al título de la disertación de Leibniz con *El arte de la fuga*.

## 2) Armonía

Si bien aún no he encontrado una versión completa de la carta de Leibniz a Christian Goldbach, sí he encontrado los siguientes extractos traducidos:

"Todos nuestros intervalos usuales son proporciones basadas en dos de los números primos 1, 2, 3 y 5. Si fuéramos dotados con un poco de mayor sutileza, podríamos arribar al número 7. Y en realidad pienso que los siguientes también están dados. De este modo los antiguos no evitaron abiertamente el número 7. Sin embargo, apenas alguien procedió más allá a los siguientes números primos, 11 y 13".

Luego, más adelante escribe:

"No creo que las proporciones irracionales sean en sí mismas agradables para el alma, excepto cuando están muy cerca de aquellas racionales que sí brindan placer."

Claramente Leibniz tenía una comprensión perpicaz de la armonía musical. Aquellos son pensamientos profundos enraizados en los griegos pero solo recientemente revividos por compositores como Harry Partch y James Tenney. Y de hecho, tal como predijo Leibniz, los compositores están empezando a explorar más minuciosamente las armonías basadas en números primos más altos, lo que Tenney llamó espacios armónicos extendidos con dimensiones superiores.

La segunda cita podría referirse a la intercalación de disonancias con consonancias como es común en las progresiones de acordes bajo la rúbrica de armonía tonal funcional. De cualquier modo prefiero otra interpretación: que Leibniz está sugiriendo aquello que Tenney llama "tolerancia de afinación" -la idea de que el cerebro aproxima las armonías irracionales al conjunto más simple de proporciones entre frecuencias.

Ciento es que aún debo seguir este hilo en los escritos de Leibniz en mayor medida pero espero encontrar más textos en los que se refiera a la armonía y los constructos armónicos.

## 3) Estética

Es difícil entender completamente los pensamientos de Leibniz sobre la percepción de la belleza. Con frecuencia alude a los conceptos del bien y el mal con respecto a la música y el arte, con lo cual estoy en desacuerdo. En mi mente la belleza absoluta no existe. La gente que cree en ella está realmente refiriéndose a una opinión sesgada que se ha vuelto statu quo. Esto es, si alguien considera que algo es universalmente malo, en realidad significa que aquello que es considerado malo es diferente de la opinión sesgada con la cual aquel alguien adhiere. Si alguien aprecia o no la belleza, y cómo, debe ser subjetivo aún cuando las parcialidades emergen, especialmente dentro de las culturas. Anteriormente he teorizado sobre qué conlleva la opinión de una persona con respecto a si aprecia algo que percibe y cómo, y por qué, esto puede diferir de persona a persona. Incluso puedo demostrarlo en términos de la Teoría Algorítmica de la Información, pero lo dejaré para otro momento y me quedaré enfocado por ahora en donde nos alineamos Leibniz y yo.

Tanto en su "Discurso sobre la Metafísica" como en sus "Meditaciones sobre el Conocimiento, la Verdad y las Ideas", Leibniz discute los conceptos de conocimiento "claro" y "confuso". El segundo me resulta particularmente interesante.

Parafraseando a Leibniz, según mi comprensión del concepto: el conocimiento confuso es la habilidad para percibir algo en tanto distinto de otras cosas aún cuando soy incapaz de expresar aquellas propiedades que hacen posible la distinción. A veces le digo a la gente que con frecuencia me interesa la música cuando sé que hay algún proceso subyacente, si bien no puedo identificarlo o articular apropiadamente con exactitud cual es el proceso. Me refiero a eso como la "incalculabilidad de la transparencia-de-concepto-a-percepto", que consiste en la ineptitud en el arte para saber hasta qué punto alguien puede deducir el concepto de una obra a partir de su percepción o experiencia de la misma.

#### 4) Estructura

Se puede hallar el tratamiento de Leibniz sobre la relación entre partes y la relación de estas con el todo (un ejemplo de esto lo daré más adelante con respecto a los límites epistemológicos versus los prácticos) citado casi literalmente en la definición de estructura del compositor John Cage. Sin embargo, Leibniz tenía pensamientos todavía más radicales respecto a la estructura. Como has señalado en tu escrito, Leibniz básicamente predijo la Teoría Algorítmica de la Información en el siguiente pasaje de su "Discurso sobre Metafísica":

"Si alguien trazara una línea continua que a veces es recta a veces circular, y en otras ocasiones de otra naturaleza, es posible encontrar una noción, o regla, o ecuación común a todos los puntos de esta línea... Cuando una regla es extremadamente compleja, lo que está en conformidad con ella pasa por irregular... Pero Dios ha elegido el mundo más perfecto, esto es, aquel que es al mismo tiempo el más simple en hipótesis y el más rico en fenómeno."

Esta declaración es esencialmente sinónima con respecto al principio fundamental de la Teoría Algorítmica de la Información: hay estructura si el programa de la computadora que genera el objeto dado es inferior en bits que el objeto mismo. Tal vez esta idea más que las otras, es la que me gustaría seguir tanto como sea posible en la obra de Leibniz para comprender mejor su génesis.

#### 5) Los límites Epistemológicos versus los Prácticos

En la disertación, Leibniz escribe:

"El concepto de partes es este: dada una pluralidad de entes todos los cuales se entiende que tienen algo en común; entonces, ya que es inconveniente o imposible enumerarlos a todos cada vez, se piensa un nombre que toma el lugar en nuestro razonamiento por todas las partes, para hacer más breve la expresión. A esto se le llama todo. Pero en cualquier número de cosas dadas cuales sea, incluso infinitas, podemos entender lo que es verdad de todas, ya que podemos enumerarlas todas individualmente, al menos en un tiempo infinito. Por ende es permisible usar un nombre en nuestro razonamiento en lugar de todas, y este será por sí mismo un todo."

De manera similar a como Leibniz estaba interesado en un alfabeto del pensamiento humano y en el léxico de un lenguaje universal, con frecuencia hacer arte se trata de la definición de elementos y de cómo son dispuestos (o en el caso de una obra abierta, de cómo podrían ser dispuestos). Y tal como es inconveniente enumerar uno por uno todos los pares de sujeto-predicado para un lenguaje universal, también es con frecuencia difícil, si no completamente imposible, enumerar todas las músicas posibles hechas a partir de un conjunto dado de elementos musicales. A menudo considero que los conceptos musicales que concibo en el proceso composicional aumentan vertiginosamente sin control de la misma manera que en combinatoria sus análogos matemáticos más abstractos explotan exponencialmente. ¿Pero de dónde viene la inspiración que guía al artista para limitar el material y ordenarlo en una manera particular? Aquí la fe en Dios de Leibniz lo guía. Gran parte de su obra hace referencia a la perfección de la creación divina y la misma disertación parte con una prueba de la existencia de Dios. Pero todo esto está a la búsqueda de la verdad y claramente está sembrando la idea de un verificador de pruebas universal. Esta es otra cosa más que me asombra de su proceso de pensamiento. Casi como digresiones, inventa nuevos campos de la matemática o profetiza conceptos que solo serán probados o descartados mucho más tarde.

Esta brecha entre los límites del conocimiento y los límites de lo práctico también ocurre en la Teoría Algorítmica de la Información. Independientemente de la paradoja de no ser capaz de encontrar con certidumbre un programa mínimo, simplemente encontrar un programa que en absoluto produzca un resultado dado es exhaustivo más allá de nuestros medios actuales de computación. Sueño con un mundo en el cual todas mis ideas serían computables.

## 6) Libre albedrío

La brecha de la que hablo arriba también me da una buena porción de fe en la intuición y la inspiración. Y en que mis decisiones intuitivas son exactamente las computaciones que me interesa realizar con máquinas. ¿Pero qué es la elección? Leibniz cree que todos los predicados verdaderos están contenidos dentro de un sujeto dado. Esta es otra idea más en la que Leibniz y yo nos hemos alineado independientemente de si interpreto de manera correcta sus pensamientos. Creo que él sugiere que, debido a que no conoces el futuro, a pesar de que este está contenido en los sujetos del mundo, no importa si es que hay o no libre albedrío. Me he referido a esto como la "ilusión de la elección" en mi propia escritura. Y sugiero la misma cosa que interpreto en Leibniz: que en cualquier mundo, determinado o no, no hay diferencia entre la elección y la ilusión de la elección.

Finalmente, entonces, está el amor, el cual creo que debe estar intrínsecamente enlazado con el arte y la creatividad. Ahora sé cómo es el amor real y cuán inspirado estoy por el amor a otros. Tal como el arte es un conocimiento "confuso", del mismo modo es el amor. Mi cuerpo y mis sentidos me informan de su presencia y de su pérdida por otro, pero mi mente no es capaz de explicar las razones de tales distinciones viscerales. Imagino que Leibniz ha analizado en otros pasajes lo que ahora entiendo... que todo lo que hago es por amor... y que cada gramo de mi energía creativa existe para que ese amor sea recíproco.

Con mis mejores deseos,

Michael Winter (Los Angeles; 23 de enero, 2016)

## preliminary thoughts

A diagram of a guitar neck showing six frets. The first four frets have fingerings: 3, 2, 4; 2, 4; 2, 4; and 4 respectively. Frets 5 and 6 are blank.

A diagram of a guitar neck with six strings and 12 frets. The strings are labeled 1 through 6 from left to right. Frets are numbered 1 through 4 above the neck. A black line starts at the 1st fret of string 6 and ascends diagonally across the strings, ending at the 4th fret of string 1.

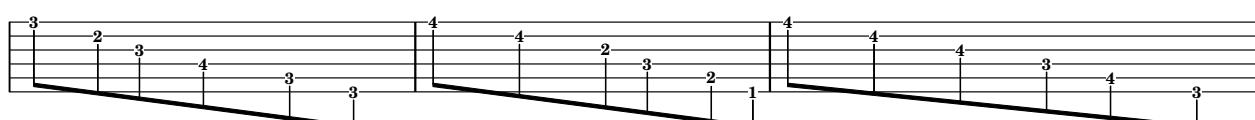
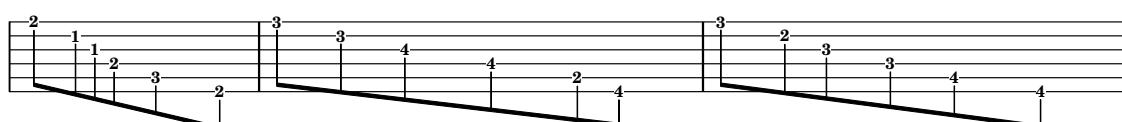
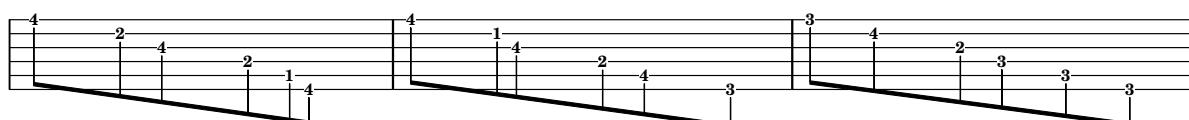
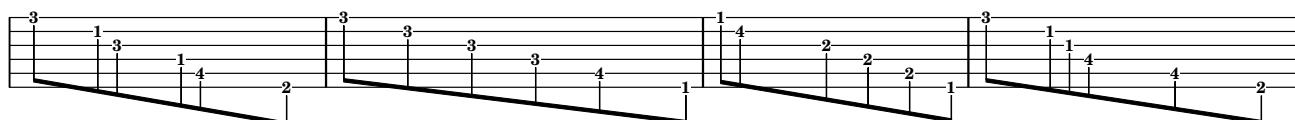
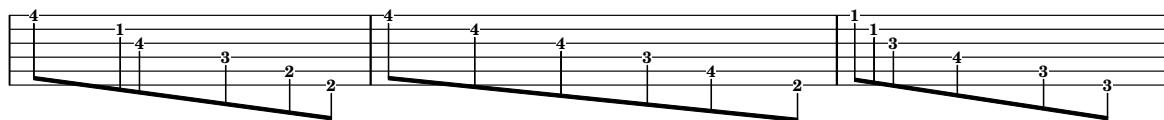
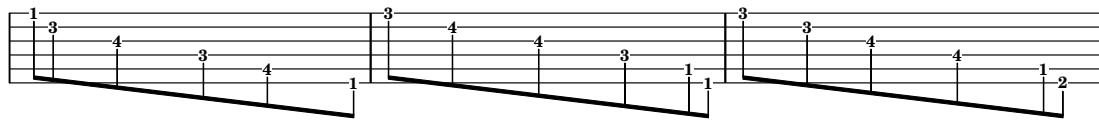
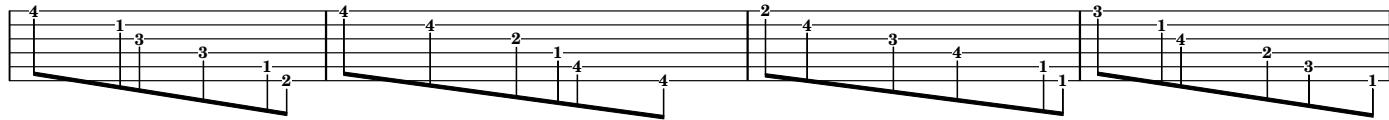
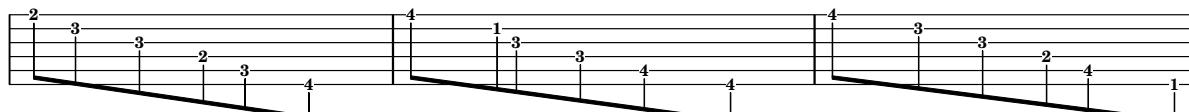
A diagram of a guitar neck illustrating a scale pattern. The neck is divided into four frets by vertical tick marks. The notes are indicated by vertical lines with numerical labels: 2, 3, 3, 3, 2, 1, 2, 4, 3, 1, 3, 3, 3, 3, 1, 2, 4, 2, 4, 2, 4, 3, 3. The pattern starts with two eighth-note pairs (2, 3), followed by a sixteenth-note triplet (3, 3, 4), and then continues with two more eighth-note pairs (3, 3) and a final sixteenth-note triplet (1, 2, 3).

Fretboard diagram for the first measure of the C major scale. The diagram shows a six-string guitar neck with the following fingerings: string 6 (low E) is muted (0), string 5 is muted (0), string 4 is muted (0), string 3 is muted (0), string 2 is muted (0), and string 1 is muted (0). The strings are muted because they do not play the notes in the scale.

Fretboard diagram for the first measure of the C major scale. The diagram shows a six-string guitar neck with the following fingerings: string 6 (low E) is muted (0), string 5 is muted (0), string 4 is muted (0), string 3 is muted (0), string 2 is muted (0), and string 1 is muted (0). The strings are muted by the left hand, and the right hand is shown with a pick.

A diagram of a guitar neck with six strings and 12 frets. The strings are numbered 1 through 6 from left to right. The diagram shows a C major scale pattern starting at the 6th string, 1st fret, and moving up to the 6th string, 12th fret. The notes are marked with vertical lines and numbers: (6,1), (5,2), (4,3), (3,4), (2,5), (1,6), (6,1), (5,2), (4,3), (3,4), (2,5), (1,6), (6,1), (5,2), (4,3), (3,4), (2,5), (1,6). The neck is shown with horizontal grid lines representing frets and vertical grid lines representing strings.

preliminary thoughts



guitar

michael winter (la, 2016)

preliminary thoughts

The image displays ten horizontal guitar neck diagrams, each consisting of six vertical strings and four horizontal frets. The diagrams illustrate various fingerings and patterns, primarily using the index (1), middle (2), ring (3), and pinky (4) fingers. The patterns include open strings, single-note runs, and chords. The diagrams are arranged vertically, showing a progression of musical ideas.

**Diagram 1:** Fret 3, strings 1-6. Fingerings: 3, 3, 1, 1, 3, 2; 3, 4, 4, 4, 1, 2, 3.

**Diagram 2:** Fret 4, strings 1-6. Fingerings: 4, 4, 4, 3, 1, 2.

**Diagram 3:** Fret 1, strings 1-6. Fingerings: 1, 1, 1, 3, 3, 2.

**Diagram 4:** Fret 3, strings 1-6. Fingerings: 1, 1, 2, 2, 2, 4.

**Diagram 5:** Fret 1, strings 1-6. Fingerings: 1, 2, 3, 2, 1, 1.

**Diagram 6:** Fret 1, strings 1-6. Fingerings: 1, 1, 2, 3, 1, 1.

**Diagram 7:** Fret 4, strings 1-6. Fingerings: 2, 4, 4, 2, 4, 4.

**Diagram 8:** Fret 3, strings 1-6. Fingerings: 3, 2, 1, 4, 2, 4.

**Diagram 9:** Fret 2, strings 1-6. Fingerings: 1, 2, 3, 3, 3, 3.

**Diagram 10:** Fret 4, strings 1-6. Fingerings: 2, 4, 2, 2, 2, 4.

**Diagram 11:** Fret 1, strings 1-6. Fingerings: 1, 3, 2, 2, 2, 1.

**Diagram 12:** Fret 4, strings 1-6. Fingerings: 4, 4, 4, 1, 2, 3.

**Diagram 13:** Fret 3, strings 1-6. Fingerings: 1, 1, 4, 4, 3, 1.

**Diagram 14:** Fret 3, strings 1-6. Fingerings: 3, 3, 2, 2, 3, 4.

**Diagram 15:** Fret 1, strings 1-6. Fingerings: 1, 1, 2, 3, 1, 3.

**Diagram 16:** Fret 4, strings 1-6. Fingerings: 2, 4, 4, 2, 4, 4.

**Diagram 17:** Fret 1, strings 1-6. Fingerings: 1, 1, 4, 4, 3, 1.

**Diagram 18:** Fret 3, strings 1-6. Fingerings: 3, 3, 2, 2, 3, 4.

**Diagram 19:** Fret 3, strings 1-6. Fingerings: 3, 1, 2, 3, 1, 3.

**Diagram 20:** Fret 4, strings 1-6. Fingerings: 2, 2, 2, 3, 4, 1.

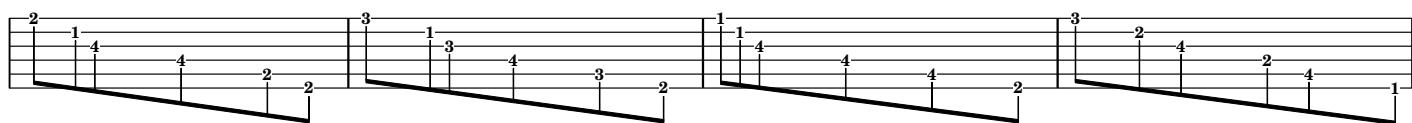
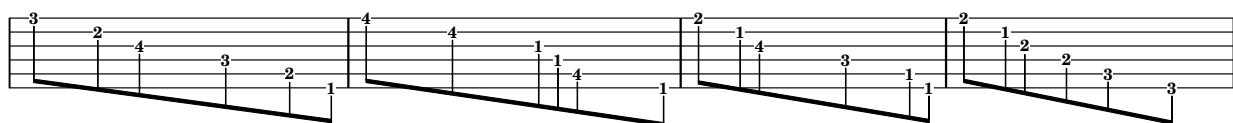
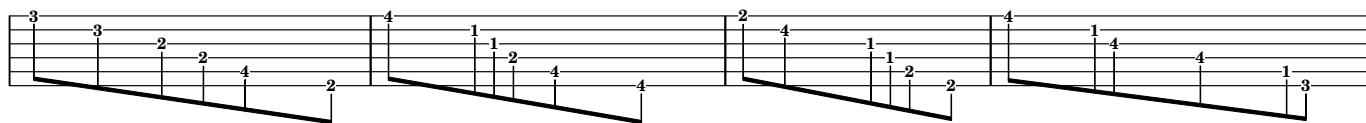
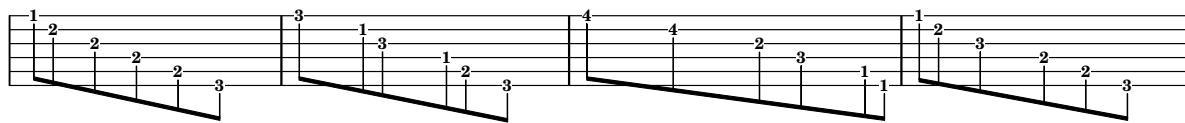
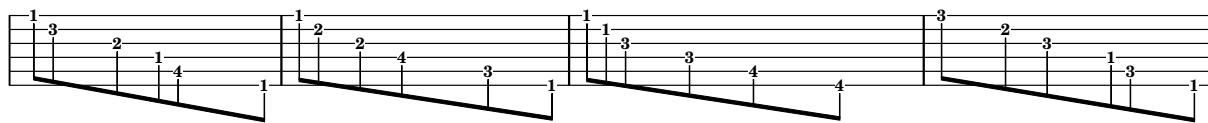
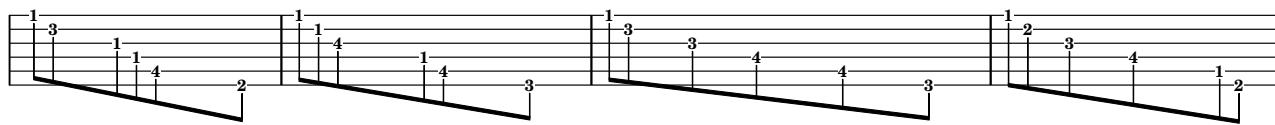
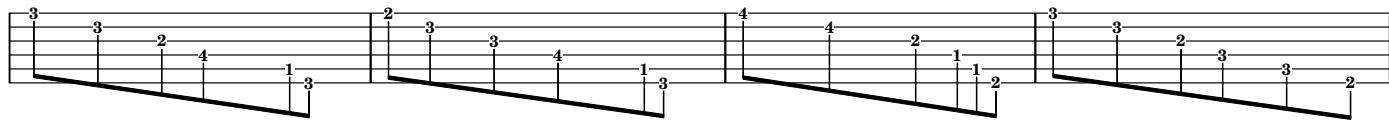
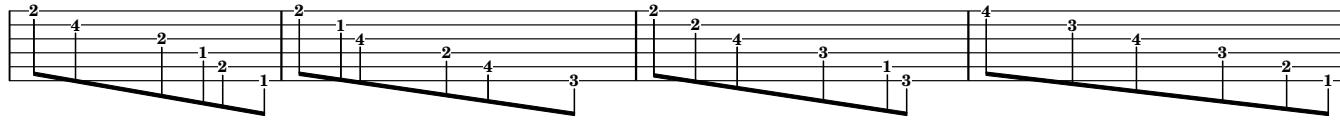
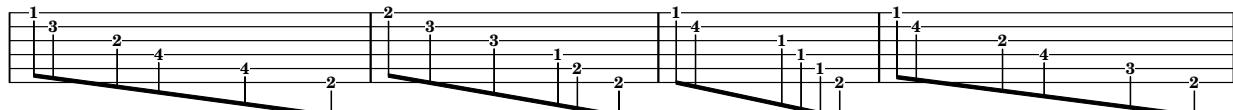
**Diagram 21:** Fret 2, strings 1-6. Fingerings: 2, 3, 2, 2, 2, 1.

**Diagram 22:** Fret 3, strings 1-6. Fingerings: 2, 1, 1, 3, 3, 3.

**Diagram 23:** Fret 4, strings 1-6. Fingerings: 2, 2, 2, 3, 4, 1.

**Diagram 24:** Fret 3, strings 1-6. Fingerings: 3, 1, 1, 3, 1, 1.

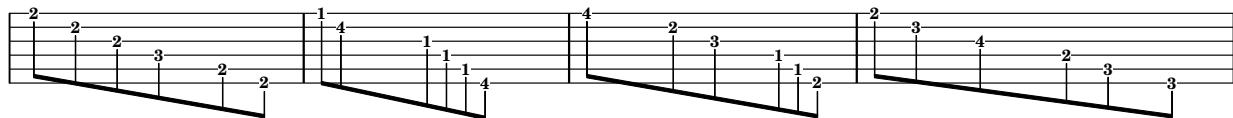
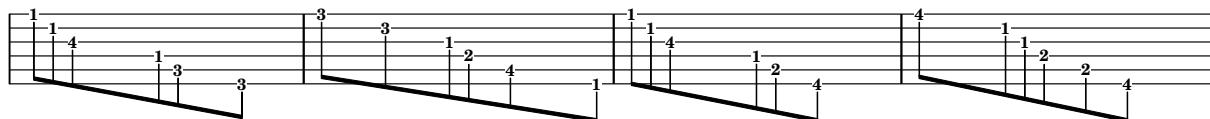
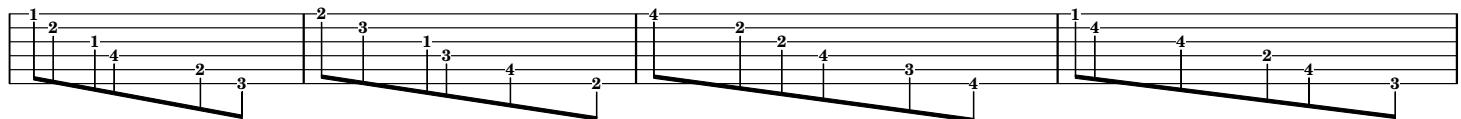
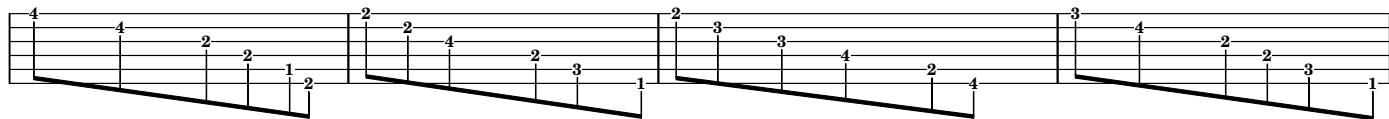
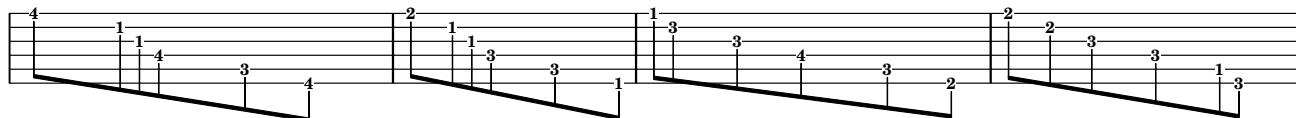
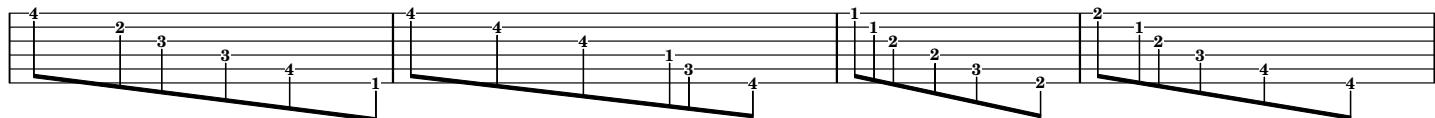
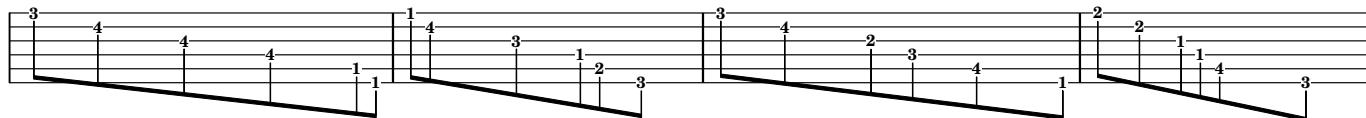
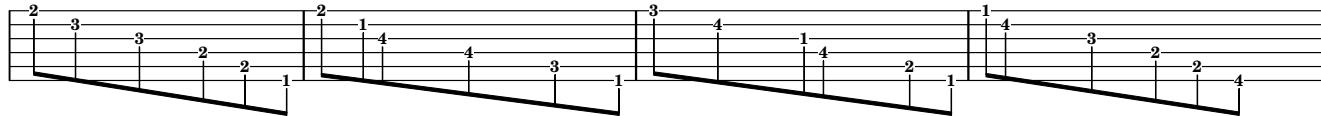
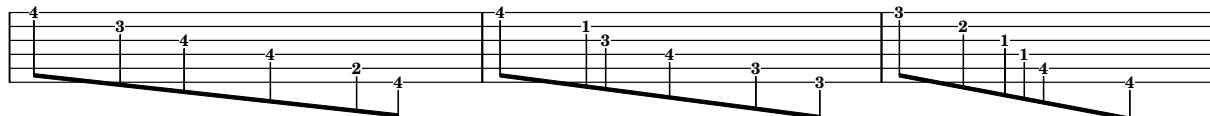
preliminary thoughts



guitar

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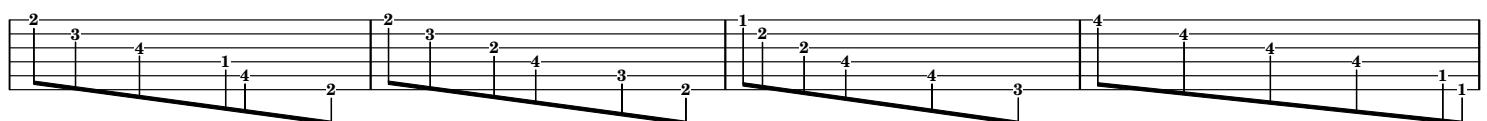
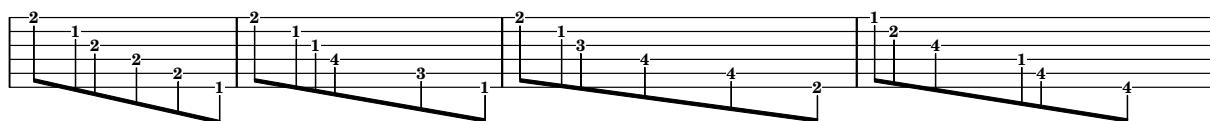
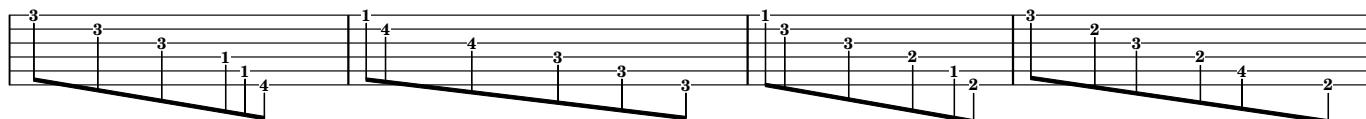
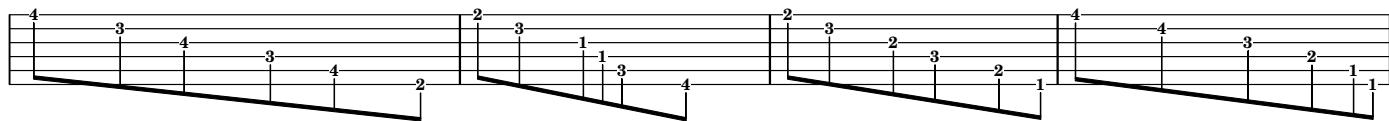
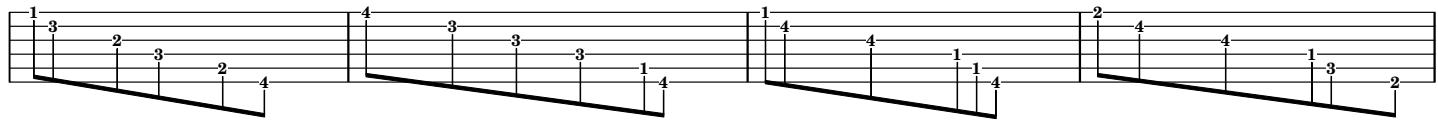
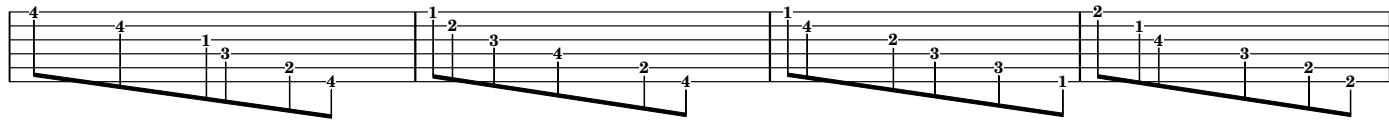
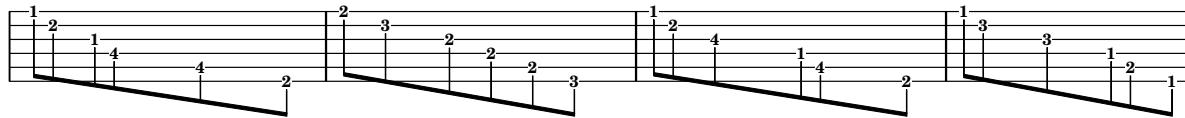
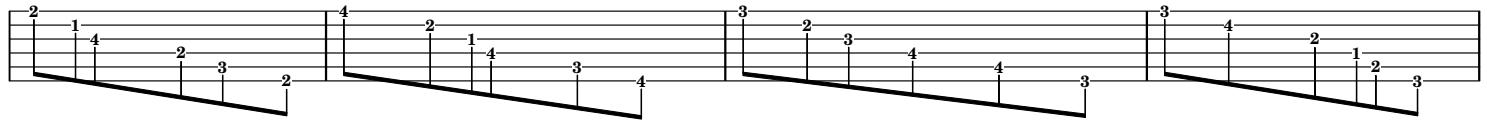
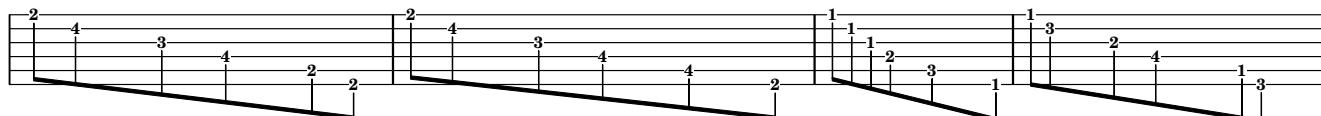
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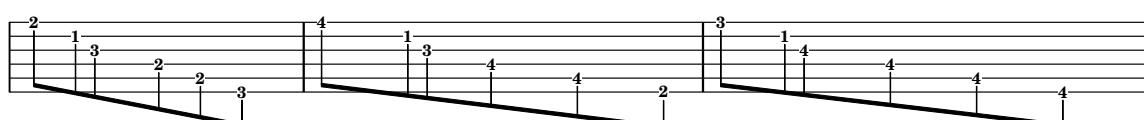
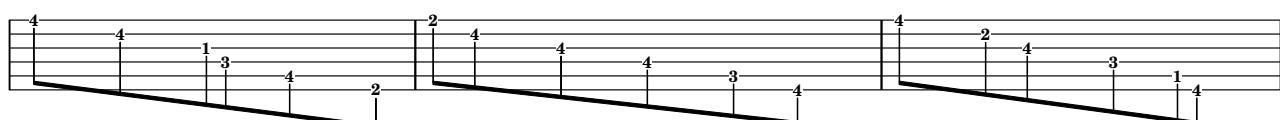
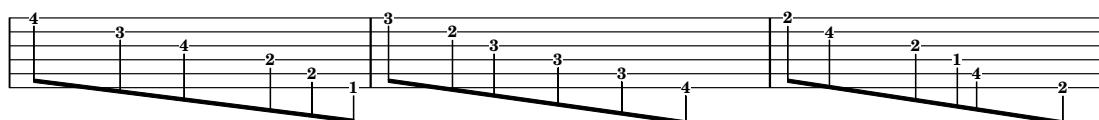
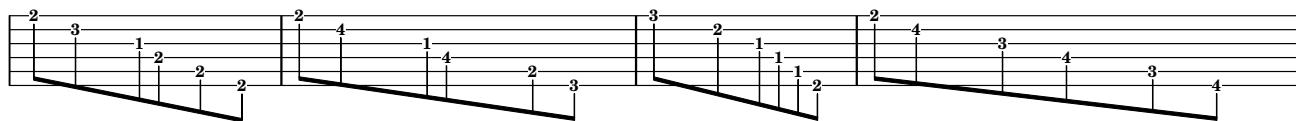
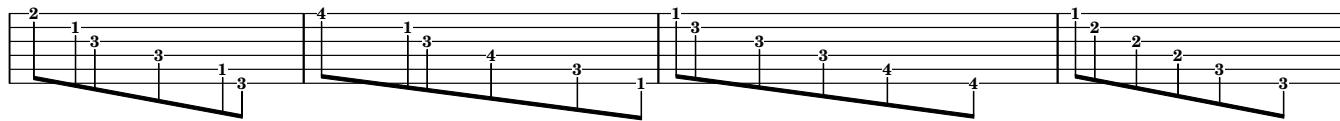
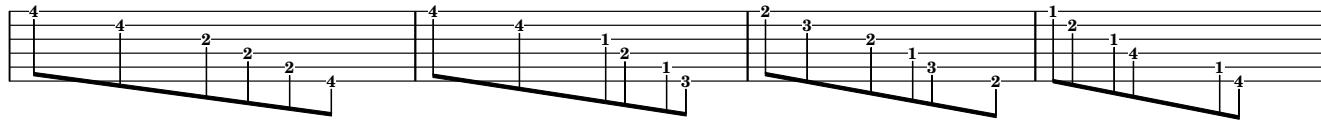
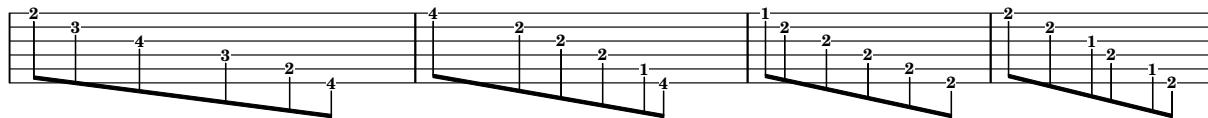
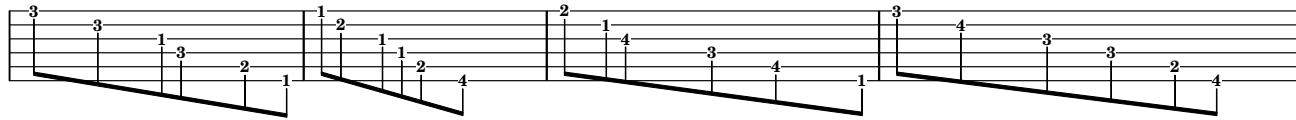
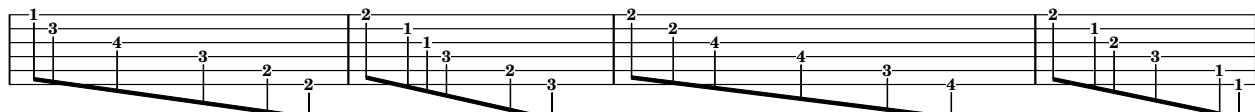
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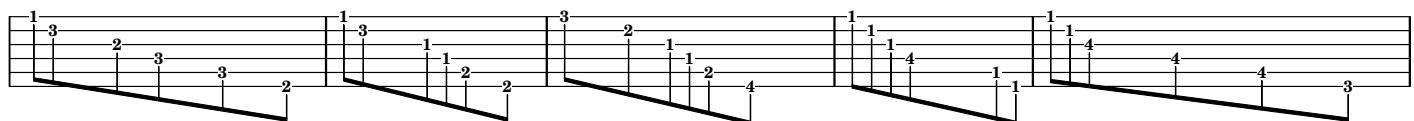
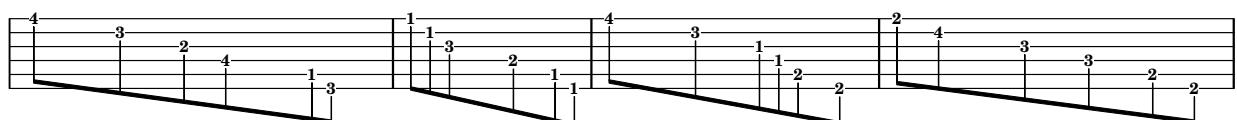
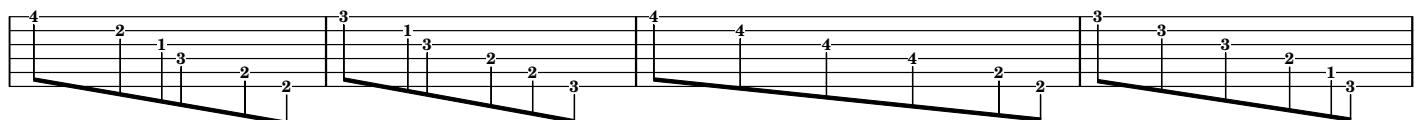
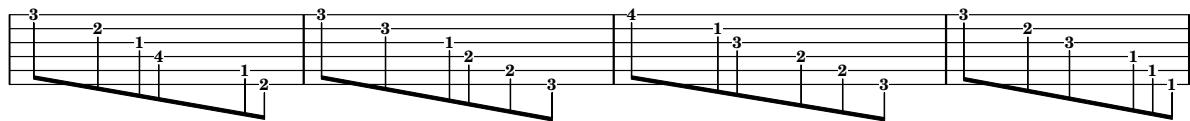
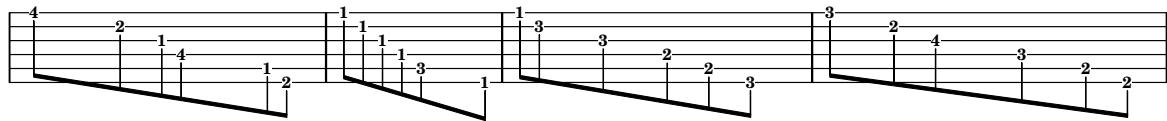
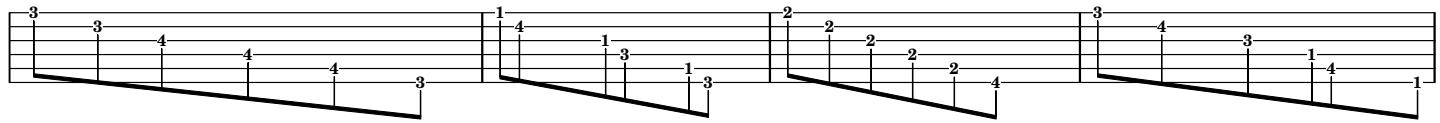
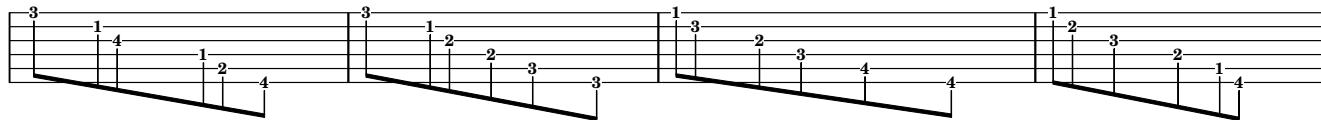
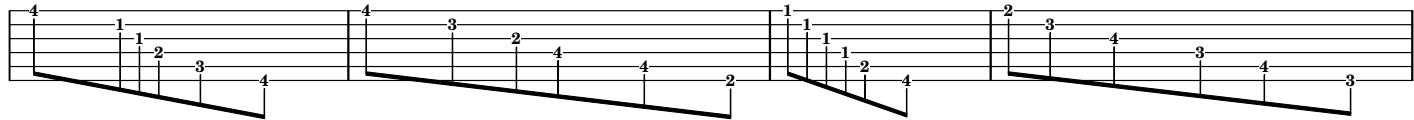
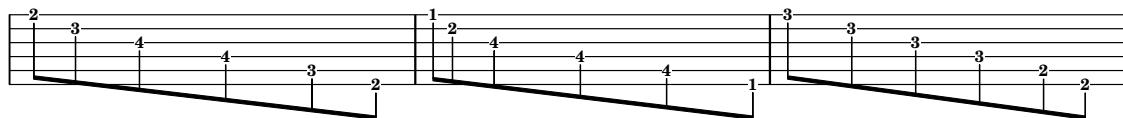
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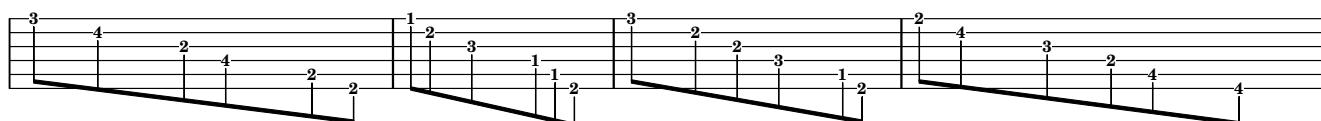
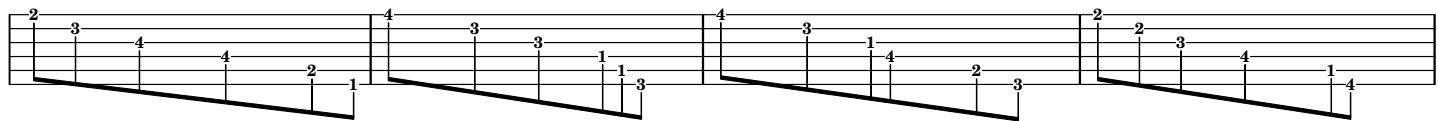
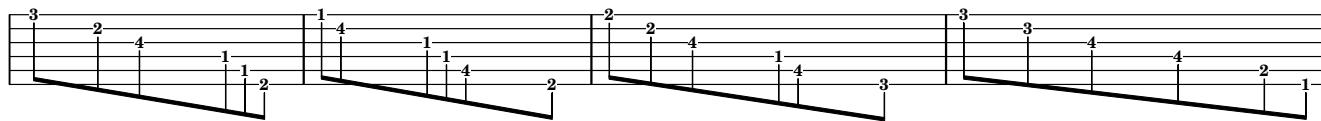
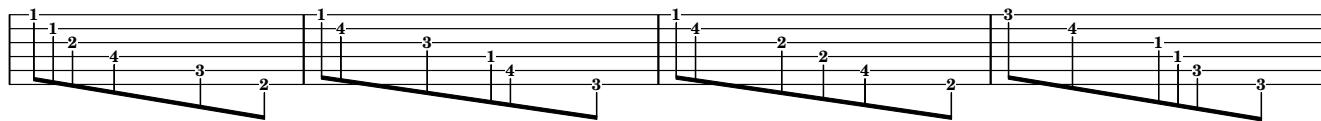
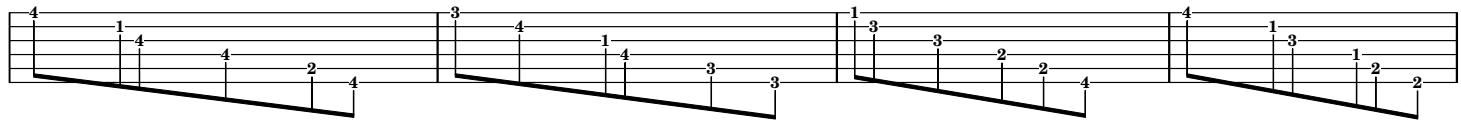
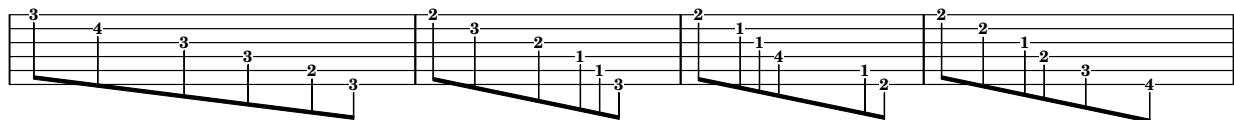
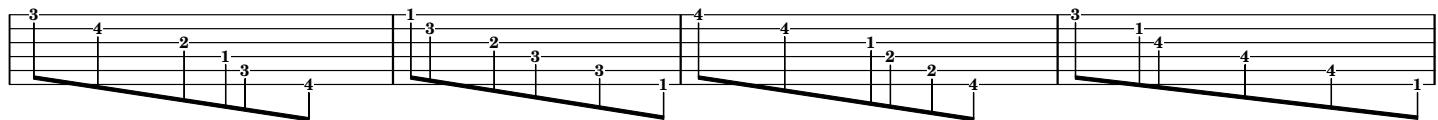
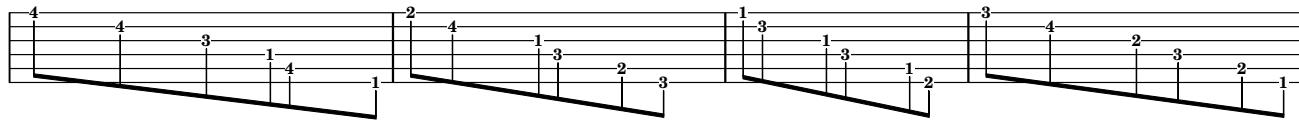
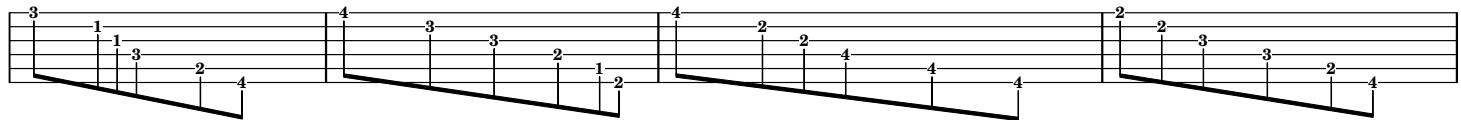
The image displays a sequence of nine guitar neck diagrams, each consisting of six horizontal strings and four vertical frets. The diagrams illustrate various fingerings and patterns, likely for preliminary thought exercises. The patterns include:

- Diagram 1:** Fret 3, strings 3, 1, 3, 4; Fret 2, strings 2, 4, 4, 4, 2; Fret 4, strings 1, 2, 4, 4, 4.
- Diagram 2:** Fret 4, strings 4, 3, 2, 1, 2, 3; Fret 2, strings 2, 4, 2, 2, 3, 3; Fret 3, strings 1, 2, 1, 1, 3; Fret 3, strings 4, 1, 4, 3, 4.
- Diagram 3:** Fret 1, strings 1, 4, 2, 2, 1, 1; Fret 4, strings 1, 4, 2, 3, 1; Fret 4, strings 1, 1, 4, 2, 3; Fret 3, strings 3, 1, 4, 4, 2.
- Diagram 4:** Fret 4, strings 4, 3, 1, 2, 4, 4; Fret 3, strings 3, 2, 2, 3, 2, 3; Fret 1, strings 1, 2, 4, 4, 2, 3; Fret 2, strings 1, 2, 4, 3, 3, 1.
- Diagram 5:** Fret 4, strings 4, 3, 3, 3, 4; Fret 1, strings 1, 2, 2, 4, 1, 2; Fret 1, strings 4, 3, 3, 1, 1; Fret 4, strings 3, 4, 3, 2, 2.
- Diagram 6:** Fret 2, strings 2, 1, 2, 2, 4, 3; Fret 4, strings 1, 1, 4, 1, 4; Fret 2, strings 1, 3, 4, 2, 4; Fret 2, strings 3, 1, 3, 2, 4.
- Diagram 7:** Fret 3, strings 3, 2, 4, 4, 1, 2; Fret 4, strings 1, 3, 1, 2, 3; Fret 3, strings 3, 1, 4, 2, 2; Fret 3, strings 3, 3, 4, 3, 3.
- Diagram 8:** Fret 1, strings 1, 3, 3, 4, 2, 2; Fret 4, strings 2, 1, 2, 1, 3; Fret 2, strings 4, 3, 4, 3, 3; Fret 1, strings 1, 4, 4, 1, 4.
- Diagram 9:** Fret 4, strings 4, 4, 3, 4, 1, 3; Fret 4, strings 1, 2, 4, 1, 2; Fret 4, strings 3, 2, 3, 1, 3; Fret 4, strings 3, 2, 1, 1, 3.

preliminary thoughts



preliminary thoughts



preliminary thoughts

A diagram showing a guitar scale pattern across four frets. The strings are numbered 1 through 6 from left to right. The notes are indicated by vertical tick marks above the strings, with numerical values placed above each tick mark. The pattern starts at the 3rd fret of string 6 and continues down to the 1st fret of string 3. The values for the notes are: string 6: 3, 4, 4, 1, 1, 2; string 5: 2, 2, 2, 2, 4, 2; string 4: 4, 2, 4, 2, 3, 1; string 3: 2, 2, 2, 1, 3, 3.

A diagram of a guitar neck with six strings and 12 frets. The strings are labeled 1 through 6 from left to right. Frets are numbered 1 through 4 above the neck. A black line represents a continuous scale run starting at the 3rd fret of string 6 and ending at the 3rd fret of string 1. Fingerings are indicated above the strings: (3, 2, 4) on string 6; (1, 2, 1) on string 5; (1, 3) on string 4; (1, 2, 3, 1) on string 3; (3, 4) on string 2; and (1, 3, 3, 2) on string 1.

A diagram of a guitar neck illustrating a scale pattern. The neck has six strings and four frets. The notes are marked with numbers 1, 2, 3, and 4. A thick black line connects the 1st, 3rd, and 5th notes of each group, indicating a specific fingering or technique.

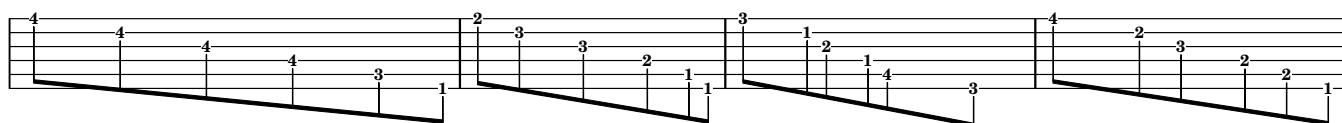
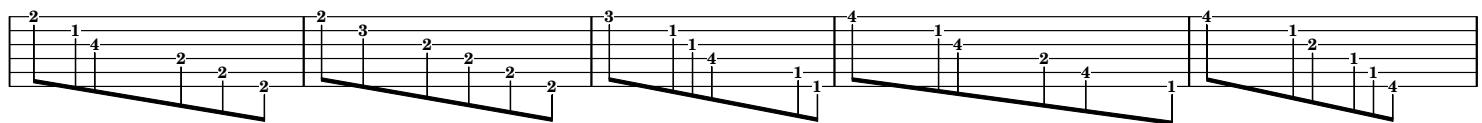
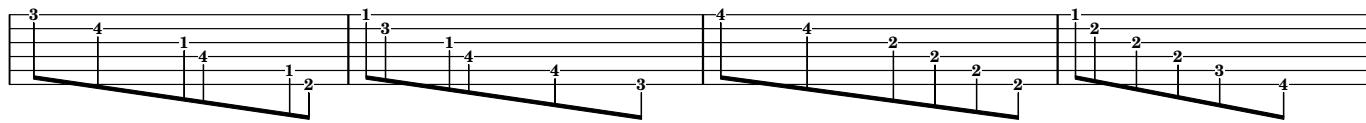
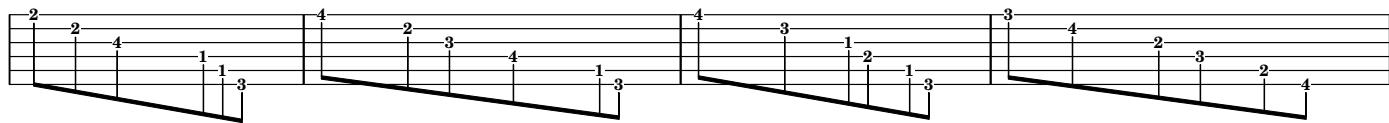
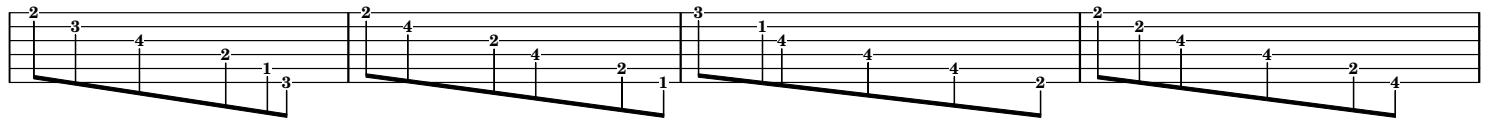
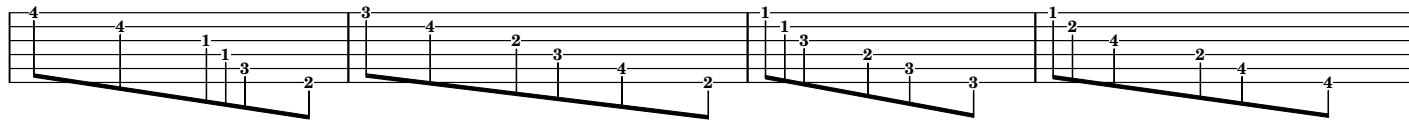
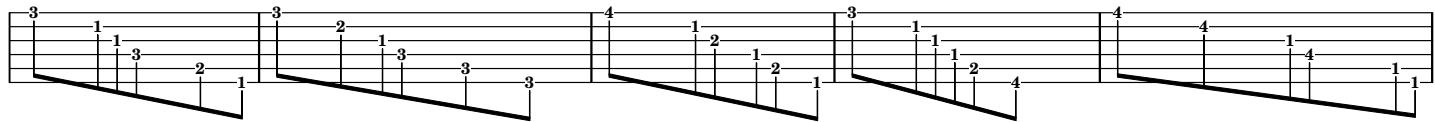
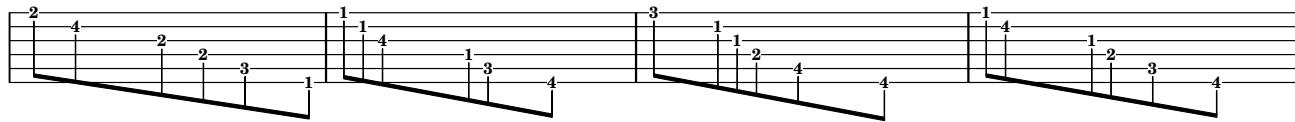
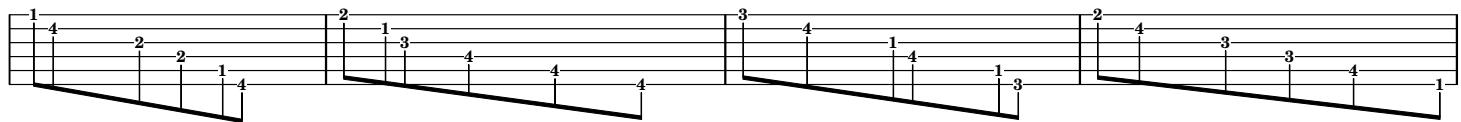
A diagram of a guitar neck with six strings and 12 frets. The strings are numbered 1 through 6 from left to right. Frets are numbered 1 through 4 above the neck. A black line represents a scale path starting at the 12th fret of string 6, moving down to the 11th fret of string 6, then to the 10th fret of string 5, the 9th fret of string 4, the 8th fret of string 3, the 7th fret of string 2, and finally the 6th fret of string 1. Fingerings are indicated above the neck: (1,4) on string 6, (1,3) on string 5, (1,3) on string 4, (1,4) on string 3, (3,4) on string 2, and (4) on string 1.

A diagram of a guitar neck with six strings and a fingerboard. The strings are numbered 1 through 6 from left to right. Fret positions are indicated by vertical lines with numbers above them. The first measure shows a descending scale from the 2nd fret of string 1 to the open (0) position of string 6. The second measure shows an ascending scale from the open (0) position of string 1 to the 3rd fret of string 6. The third measure shows a descending scale from the 2nd fret of string 1 to the open (0) position of string 6. The fourth measure shows an ascending scale from the open (0) position of string 1 to the 4th fret of string 6. The fifth measure shows a descending scale from the 4th fret of string 1 to the open (0) position of string 6. The sixth measure shows an ascending scale from the open (0) position of string 1 to the 3rd fret of string 6. The seventh measure shows a descending scale from the 2nd fret of string 1 to the open (0) position of string 6.

A diagram of a guitar neck illustrating a C major scale pattern. The neck has six strings and 12 frets. The scale is played across four frets (3rd, 4th, 5th, and 6th) and includes notes on the 1st, 2nd, and 3rd strings. Fret numbers are indicated above the strings, and fingerings (1, 2, 3, 4) are shown at each note position. The diagram shows a continuous scale pattern with slurs connecting the notes.

Fretboard diagram for the first section of the solo, showing a descending eighth-note scale pattern. The notes are marked with vertical lines and numbers: 4, 2, 1, 3, 3, 1 at the top; 2, 1, 1, 2, 3, 1 in the middle; and 3, 3, 3, 4, 2, 4 at the bottom. The pattern repeats across four octaves.

preliminary thoughts



preliminary thoughts

The image displays ten horizontal guitar neck diagrams, each consisting of six vertical strings and four horizontal frets. The diagrams illustrate various fingerings and patterns, primarily using the numbers 1, 2, 3, and 4 to indicate which fret and string to play. The patterns include open strings, single-note runs, and chords. The diagrams are arranged vertically, showing a progression of ideas.

- Diagram 1: Frets 1, 2, 3, 4. Fingerings: (1,4), (2,3), (1). Pattern: Open string 1, (1,4) on 2, (2,3) on 3, (1) on 4.
- Diagram 2: Frets 2, 4, 1, 1, 4, 4. Fingerings: (2,4), (1,1,4), (4). Pattern: (2,4) on 2, (1,1,4) on 3, (4) on 4.
- Diagram 3: Frets 3, 1, 3, 4, 4, 3. Fingerings: (3), (1,3), (4,4), (3). Pattern: Open string 3, (1,3) on 2, (4,4) on 1, (3) on 4.
- Diagram 4: Frets 3, 2, 4, 3, 4, 3. Fingerings: (3,2,4), (3,4), (3). Pattern: (3,2,4) on 2, (3,4) on 3, (3) on 4.
- Diagram 5: Frets 4, 2, 2, 1, 3, 1. Fingerings: (4,2,2), (1,3), (1). Pattern: (4,2,2) on 2, (1,3) on 3, (1) on 4.
- Diagram 6: Frets 2, 1, 4, 1, 1, 4. Fingerings: (2,1,4), (1,1,4). Pattern: (2,1,4) on 2, (1,1,4) on 3.
- Diagram 7: Frets 3, 4, 3, 3, 3, 3. Fingerings: (3,4), (3,3,3). Pattern: (3,4) on 2, (3,3,3) on 3.
- Diagram 8: Frets 1, 4, 2, 4, 3, 2. Fingerings: (1,4), (2,4), (3,2). Pattern: (1,4) on 2, (2,4) on 3, (3,2) on 4.
- Diagram 9: Frets 4, 1, 4, 4, 1, 4. Fingerings: (4,1,4), (4,4), (1,4). Pattern: (4,1,4) on 2, (4,4) on 3, (1,4) on 4.
- Diagram 10: Frets 1, 2, 1, 3, 2, 1. Fingerings: (1,2), (1,3), (2,1). Pattern: (1,2) on 2, (1,3) on 3, (2,1) on 4.
- Diagram 11: Frets 1, 1, 2, 4, 1, 1. Fingerings: (1,1,2), (4), (1,1). Pattern: (1,1,2) on 2, (4) on 3, (1,1) on 4.
- Diagram 12: Frets 1, 3, 4, 4, 3, 1. Fingerings: (1,3), (4,4), (3,1). Pattern: (1,3) on 2, (4,4) on 3, (3,1) on 4.
- Diagram 13: Frets 2, 4, 2, 2, 4, 3. Fingerings: (2,4), (2,2), (4,3). Pattern: (2,4) on 2, (2,2) on 3, (4,3) on 4.
- Diagram 14: Frets 1, 1, 1, 4, 3, 1. Fingerings: (1,1,1,4), (3,1). Pattern: (1,1,1,4) on 2, (3,1) on 4.
- Diagram 15: Frets 3, 4, 4, 1, 1, 3. Fingerings: (3,4), (4,4), (1,1,3). Pattern: (3,4) on 2, (4,4) on 3, (1,1,3) on 4.

preliminary thoughts

The image displays ten horizontal guitar neck diagrams, each consisting of six vertical strings and four frets (1, 2, 3, 4). The diagrams illustrate various fingerings and patterns, primarily using the index (1), middle (2), ring (3), and pinky (4) fingers. The patterns include open strings, single-note runs, and chords. The diagrams are arranged vertically, showing a progression of ideas. The first diagram is labeled "preliminary thoughts".

guitar

michael winter (la, 2016)

## preliminary thoughts

A diagram of a guitar neck with six strings and 12 frets. The strings are numbered 1 through 6 from left to right. Frets are numbered 1 through 4 above the neck. A black line starts at the 1st fret of string 6 and moves down to the 12th fret of string 1. It then jumps to the 4th fret of string 6 and continues down to the 12th fret of string 1. This pattern repeats once more, starting at the 2nd fret of string 6 and ending at the 12th fret of string 1.

A diagram of a guitar neck illustrating a descending chromatic scale. The neck has six strings, each labeled with a number indicating its pitch: 3, 2, 1, 4, 3, 2. The numbers are placed above the strings in a staggered pattern. The scale starts at the top of the neck (string 3) and moves down to the bottom (string 1). The notes are connected by black lines, showing the fingerings for each note: 3, 2, 1, 4, 3, 2, 1, 4, 3, 2, 1, 4, 3, 2, 1, 4, 3, 2, 1, 4, 3, 2, 1, 4.

A diagram of a guitar neck with six strings and 12 frets. The strings are numbered 1 through 6 from left to right. Frets are numbered 1 through 4 from bottom to top. A scale pattern is shown starting at the 12th fret of string 6, moving down to the 11th fret, then up to the 12th fret of string 5, down to the 11th fret, up to the 12th fret of string 4, down to the 11th fret, up to the 12th fret of string 3, down to the 11th fret, up to the 12th fret of string 2, down to the 11th fret, up to the 12th fret of string 1, and finally down to the 11th fret.

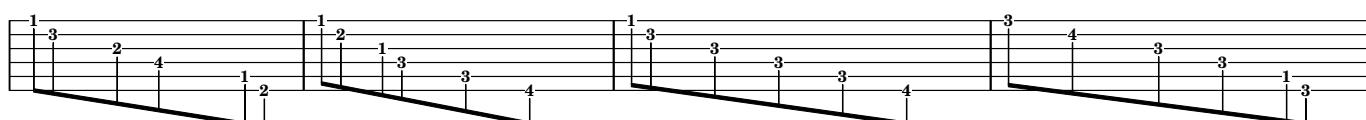
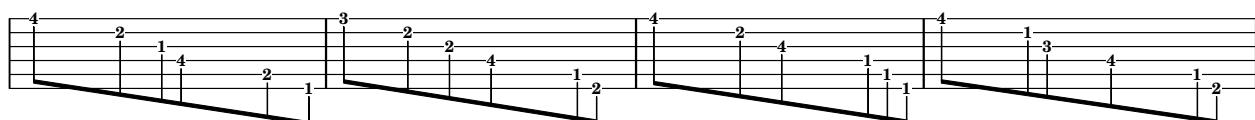
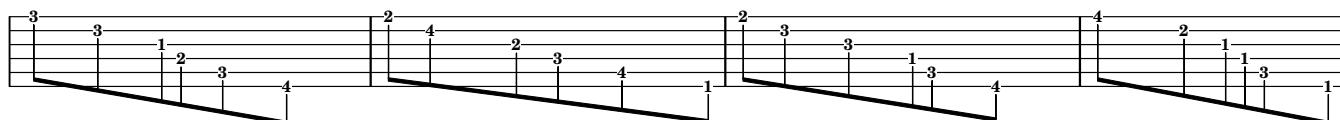
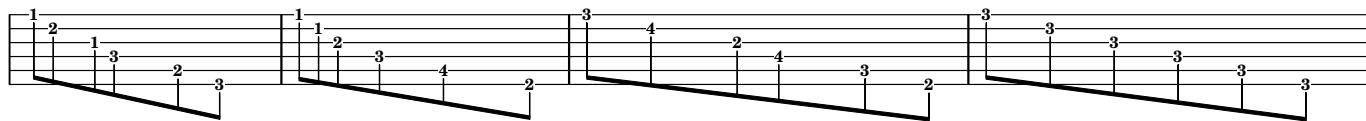
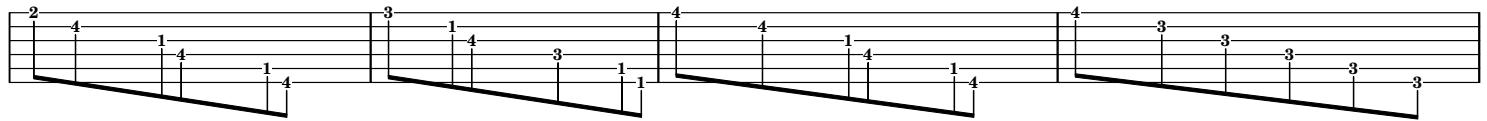
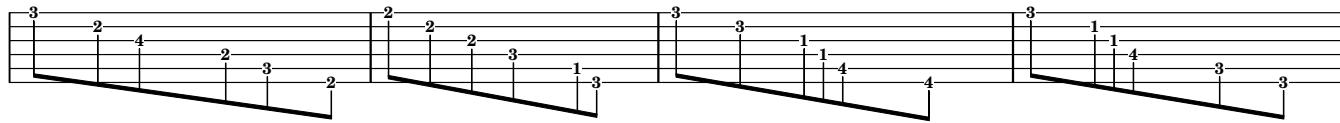
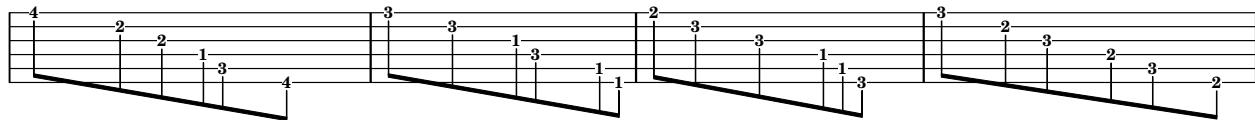
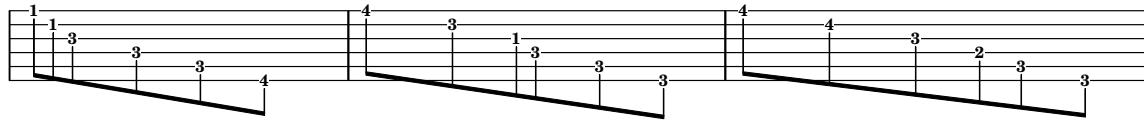
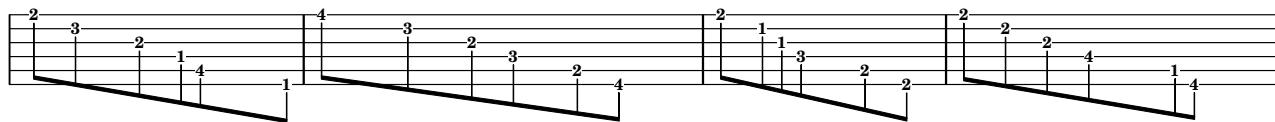
A musical staff with four measures. The first measure starts with a bass clef, a 'C' key signature, and a common time signature. It consists of four eighth-note chords: B3-D4, E3-G4, A3-C4, and D3-F4. The second measure starts with a treble clef, an 'F#' key signature, and a common time signature. It consists of four eighth-note chords: G2-B2, C2-E2, F2-A2, and B1-D2. The third measure starts with a bass clef, a 'G' key signature, and a common time signature. It consists of four eighth-note chords: C3-E3, G3-B3, D3-F3, and A3-C4. The fourth measure starts with a treble clef, a 'D' key signature, and a common time signature. It consists of four eighth-note chords: F3-A3, B3-D4, E3-G4, and A3-C4.

A diagram of a guitar neck illustrating a scale pattern. The neck has six strings and 12 frets. The pattern starts at the 1st fret and continues up to the 12th fret. At each fret, the string numbers are: 4, 1, 4, 4, 2, 1. This pattern repeats every six frets, spanning three octaves.

A musical staff with five horizontal lines and four spaces. It features a descending eighth-note scale pattern. The notes are labeled with numbers 1 through 4 from top to bottom. The pattern repeats across four measures. Measure 1: 4, 3, 2, 1. Measure 2: 4, 3, 2, 1. Measure 3: 4, 3, 2, 1. Measure 4: 4, 3, 2, 1.

Fretboard diagram for the first measure of the C major scale. The diagram shows a six-string guitar neck with the following fingerings: string 6 (low E) is muted (0), string 5 is muted (0), string 4 is muted (0), string 3 is muted (0), string 2 is muted (0), and string 1 is muted (0). The strings are muted because they do not play the notes in the C major scale at this position.

preliminary thoughts

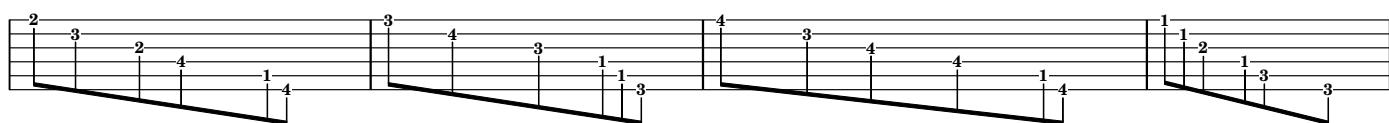
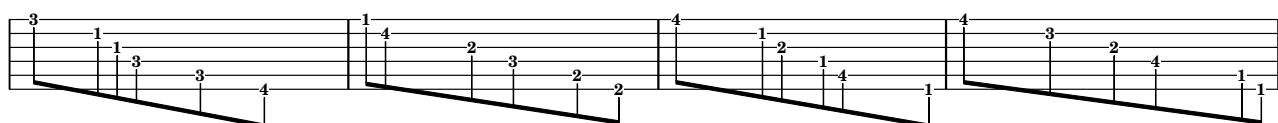
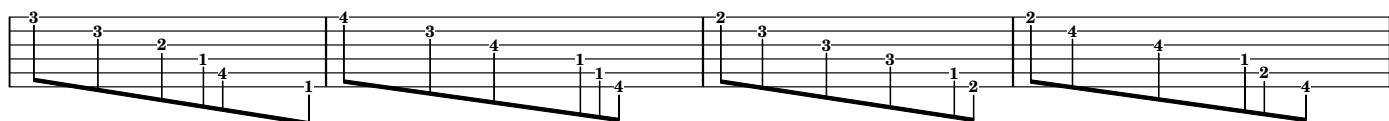
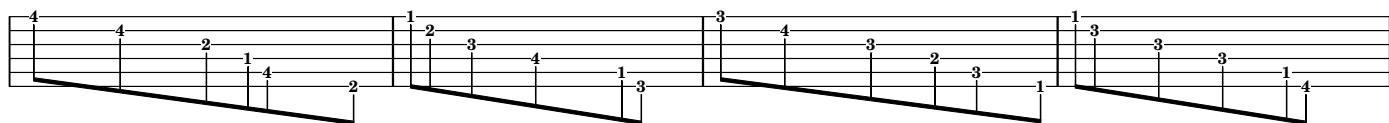
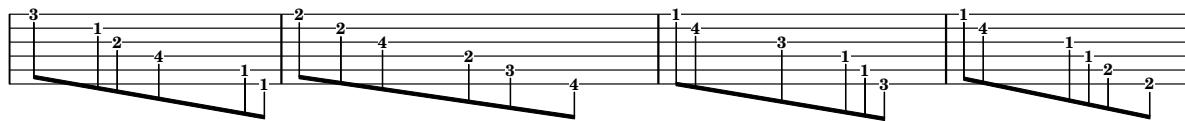
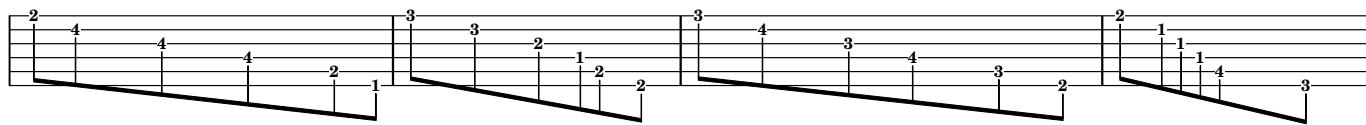
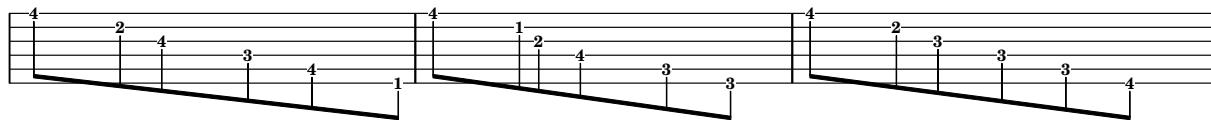
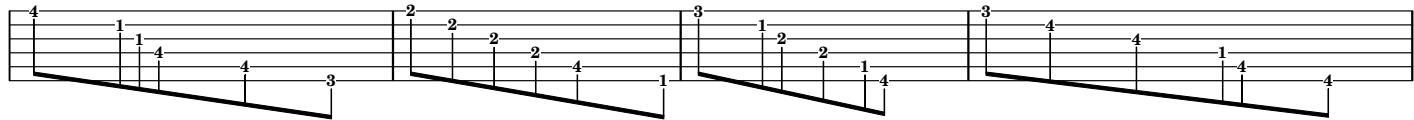
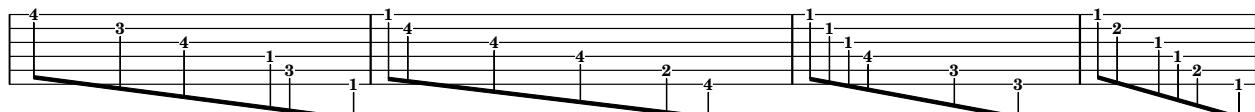


preliminary thoughts

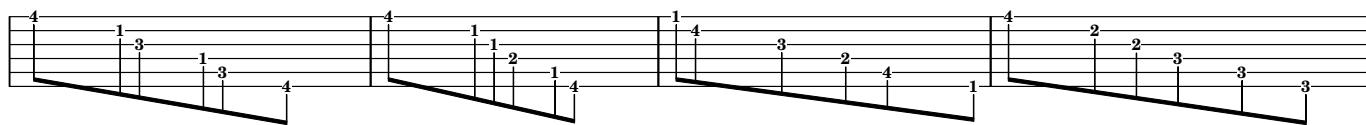
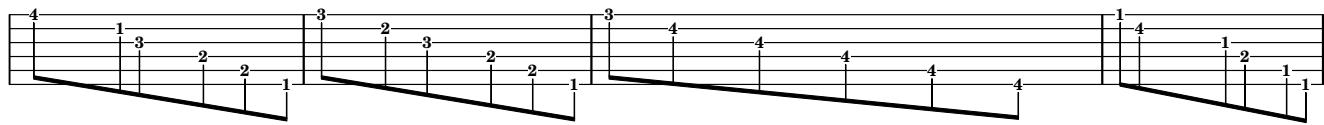
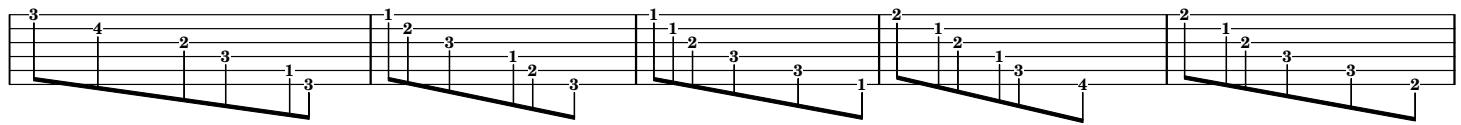
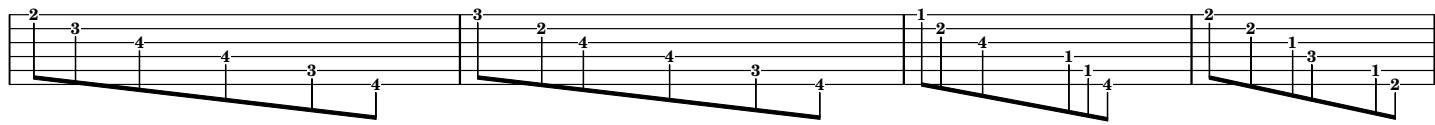
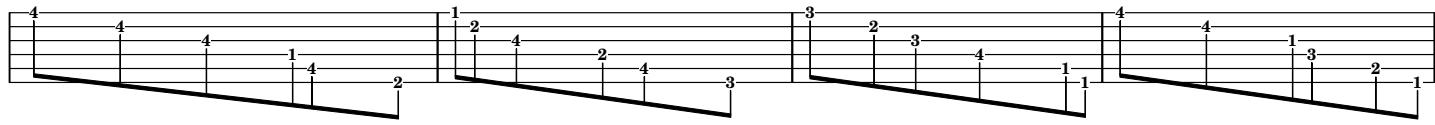
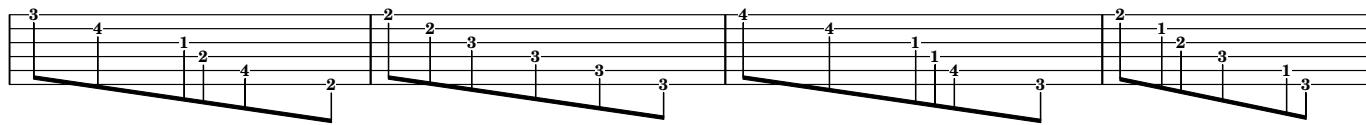
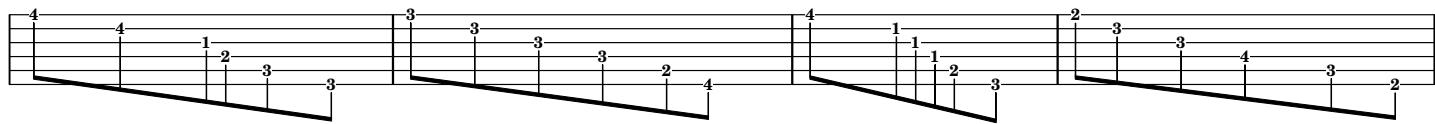
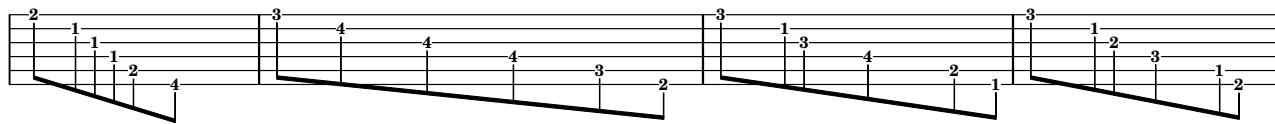
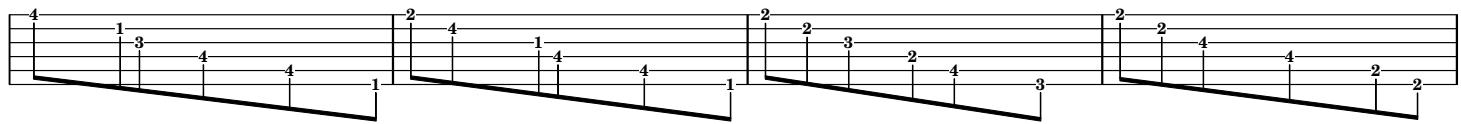
The image consists of ten horizontal guitar neck diagrams, each with four frets labeled 1, 2, 3, and 4 from left to right. Each diagram shows a different set of fingerings (1, 2, 3, or 4) on specific strings. The diagrams are arranged vertically, with a small gap between each. The first diagram has a title "preliminary thoughts" centered above it. The guitars are shown with black necks and white fretboards.

- Diagram 1: Fret 1 (1), Fret 2 (3), Fret 3 (3), Fret 4 (1)
- Diagram 2: Fret 2 (2), Fret 1 (1), Fret 3 (3), Fret 4 (1)
- Diagram 3: Fret 4 (4), Fret 4 (4), Fret 2 (2), Fret 3 (3)
- Diagram 4: Fret 1 (1), Fret 2 (2), Fret 3 (3), Fret 4 (4)
- Diagram 5: Fret 2 (2), Fret 1 (1), Fret 4 (4), Fret 3 (3)
- Diagram 6: Fret 3 (3), Fret 2 (2), Fret 3 (3), Fret 4 (4)
- Diagram 7: Fret 4 (4), Fret 3 (3), Fret 2 (2), Fret 1 (1)
- Diagram 8: Fret 1 (1), Fret 2 (2), Fret 3 (3), Fret 4 (4)
- Diagram 9: Fret 2 (2), Fret 1 (1), Fret 4 (4), Fret 3 (3)
- Diagram 10: Fret 3 (3), Fret 2 (2), Fret 3 (3), Fret 4 (4)
- Diagram 11: Fret 4 (4), Fret 3 (3), Fret 2 (2), Fret 1 (1)
- Diagram 12: Fret 3 (3), Fret 2 (2), Fret 1 (1), Fret 4 (4)
- Diagram 13: Fret 2 (2), Fret 3 (3), Fret 1 (1), Fret 4 (4)
- Diagram 14: Fret 3 (3), Fret 2 (2), Fret 1 (1), Fret 4 (4)
- Diagram 15: Fret 4 (4), Fret 3 (3), Fret 2 (2), Fret 1 (1)
- Diagram 16: Fret 3 (3), Fret 2 (2), Fret 1 (1), Fret 4 (4)

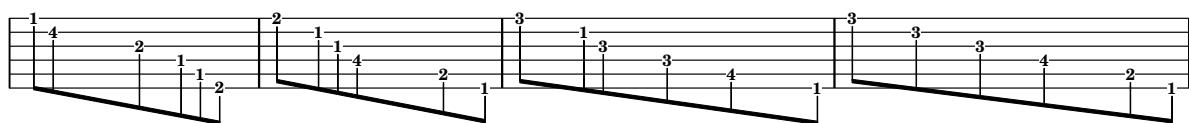
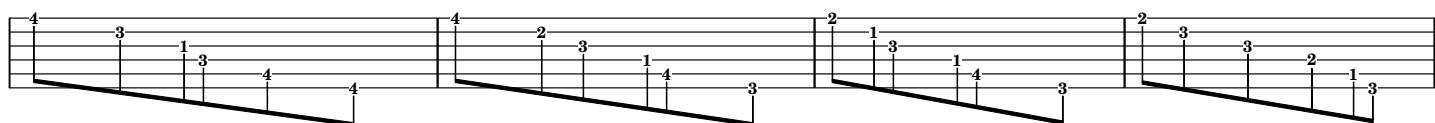
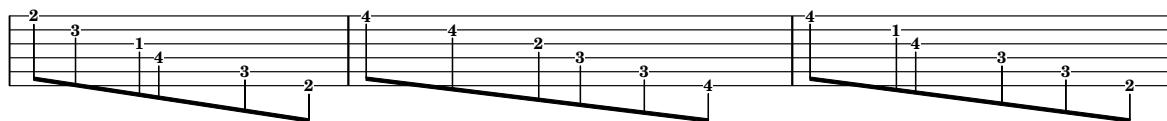
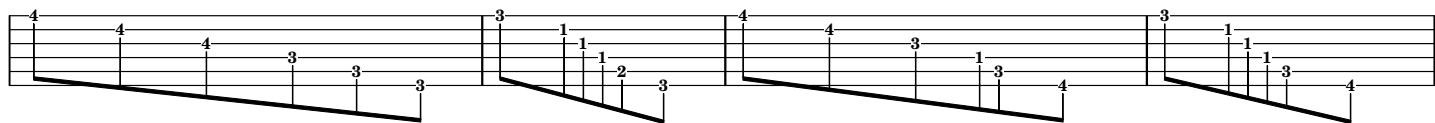
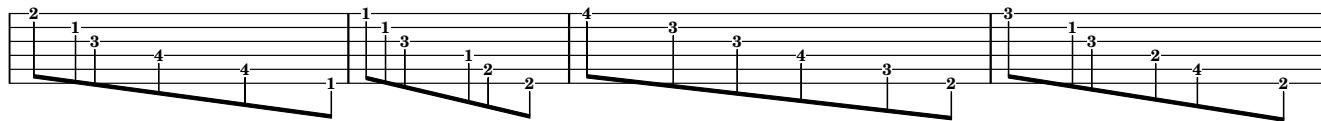
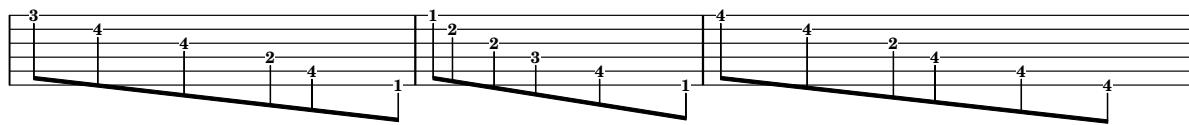
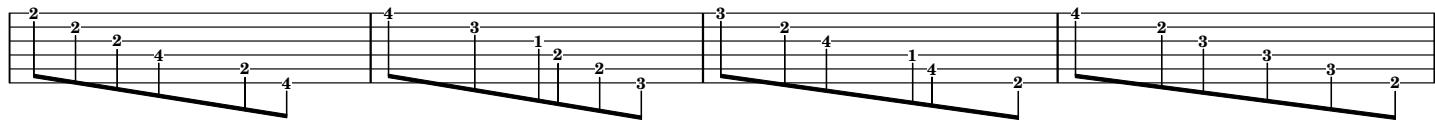
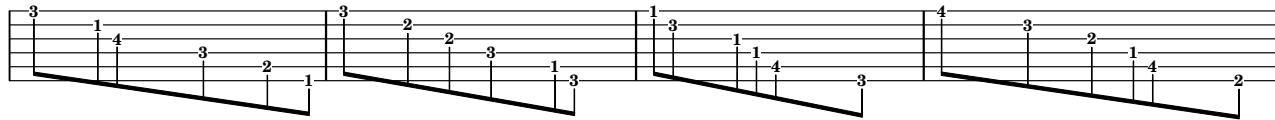
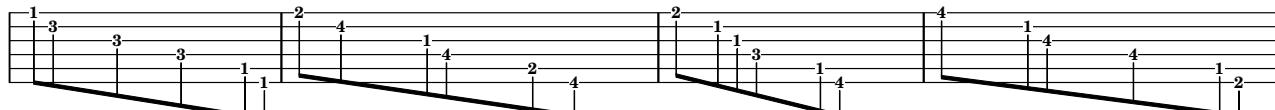
preliminary thoughts



preliminary thoughts



preliminary thoughts



guitar

michael winter (la, 2016)