

## The Metronome

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I sit upon the throne of my drum kit. I take out my phone, open the metronome app, and set it to eighth notes at 73 bpm. I put an accent on the first beat: the one. Then I play along to the click of the metronome on the high hat with my right hand. It takes me a minute to sync with it. As I play I loosen my grip and I generate more of the motion from my wrist, less from my arm. Eventually the metallic snap of the hi hat and the click of the metronome are one single sound. As I play I drift slightly; I could sit here for hours just like this, trying to be absolutely perfect. But instead I add a kick on the one. Once I lock it in with my right hand, I add another kick on the three. And after that I add the snare to the two and four. First I must sync my right arm, left arm, and right foot with each other. Then I resync with the metronome.

I set the metronome to quarter notes, effectively cutting the bpm in half. My right hand becomes less rigid. The scarcity of metronome clicks makes it easier to listen to each click individually; each time checking if I am slightly ahead or behind. Very rarely am I exactly where I want to be. Even when I am, I credit it more to the fallibility of my ear than the perfection of my playing. These moments are satisfying nonetheless.

I am playing the first beat I ever learned. It's not particularly good. I can't think of a single song which uses it without at least an extra kick or a fill. At first it's agonizing to sit in it. I want to add a kick anticipating the one, an open hat, or a ghost note on the snare. But this isn't an exercise in playing, it's an exercise in listening.

I set the metronome to the one and three: 36.5 bpm quarter notes. The more I listen the easier it is. I close my eyes and focus as much as I can on the click. I forget that I am playing the drums and simply take note of where the kit and the click land in relation to each other.

I set the metronome only click on the one: 18.25 bpm quarter notes. I feel like I am free climbing a mountain or tightrope walking with no safety net. When I fall slightly behind the click I speed up to compensate. From there it is hard to recover, to realign with such a scarce click. It is frustrating. But subdividing makes it easier. I start again with nothing but the high hat and eventually I sync again. I add the kick and snare. Again, I devote all of my mental energy to listening to the metronome. I relax and my brain ceases to think. The intrusive thoughts which

emerged in my head when I first started are no longer there. My mind is empty. The boundary between me and the click vanishes. The kick is generating the click or perhaps it's the other way around. The two are the same.

The metronome is not musical. Music is dynamic. Every element of music can be thought of in terms of its dynamics: melody, harmony, rhythm, volume, timbre, and even tempo. Within most songs all of these elements change. Consider the difference between a metronome and a backing track. Both are meant to keep tempo, but a backing track has dynamics. It has chord changes, rhythmic changes, volume changes, and changes in timbre. It is far more musical than the metronome, but still not totally musical. This is in part due to its emptiness: its lack of melody. But it is also due to its lack of dynamics. Backing tracks are tools designed to help practice. They would lose their entire purpose if they had the dynamics required for real music. If they had any serious variation in volume, tempo, or voicings they would nullify the player's ability to evaluate their own playing. In fact, I feel that the few dynamic aspects of backing tracks already do that. The metronome is valuable because it is so stagnant, stark, and bare. Backing tracks are too full for you to be able to hear your own playing. The metronome is brutally honest. It leaves nothing to hide behind.

The metronome is also a useful tool because it is repetitive. Its repetition is musical. Music, art, and stories are repetitive. Good songs use the same motifs, sections, and lines many times. A good character arch is cyclical and therefore repetitive. Comedy is repetitive. Life is repetitive. Days and months and years are repetitive. We are repetitive. Will Durant surmised Aristotle's thoughts in regards to habit in his famous quote: "We are what we repeatedly do. Excellence, then, is not an act, but a habit." We are the habits we form the choices we tend to make.

The Ship of Theseus can describe us biologically: we are a system which processes matter, not the matter itself. We are a code which is constantly building and rebuilding the cells of our physical bodies. The consistency and repetition of that code is literally what we are.

Repetition in art creates expectation. My guitar teacher in highschool once told me that a guitar solo should be seventy percent expected and thirty percent surprising. A guitar solo, a song, a story, a joke, or any other creation can be thought of in terms of the expectations which it

builds and breaks. This is true on both a micro and macro scale. Artist's sounds are always interpreted in terms of the cultural patterns they lie within and the expectations they build and break on that scale. Patterns are the basis of all human perception.

The metronome is a clock. A clock which can measure different sized increments of time. The metronome and the clock were invented in the fourteenth century with the discovery that gears can be used to store energy. Both function by storing energy in a wound up coil which slowly releases as the machine incrementally clicks.

This escaping of energy is described by the second law of thermodynamics which states that the entropy of the universe only increases. Entropy is a measurement of disorder. It was first coined in the field of thermodynamics by Rudolf Clausius in the mid nineteenth-century. It describes how energy disperses; it is why ice melts, balloons deflate, and cream spreads in coffee. The second law of thermodynamics describes that energy in the universe is dispersing. By energy it means fire and fuel, matter: everything. The second law of thermodynamics can be thought of as describing personal relationships as well as the physical world. Our emotions are energy which slowly disperse over time. Our happiness, sorrow, joy, and even love disperse into the universe. Our thoughts, feelings, and relationships come and go in the same way which energy passes through a metronome.

It is possible to make metronomes drift under the proper circumstances. Syncopated metronomes set to the same tempo will sync up with each other if they have a means of communicating with each other. If many metronomes are all put onto a table which has even a slight wobble to it, the table will serve as such a means of communication. This phenomenon is referred to as entrainment. Entrainment describes organization: birds that fly as a flock, fish that swim as a school, and cells in the heart which pulsate in unison. In these systems, individuals with limited awareness will make up one cohesive, collective, and hyper aware organism by following a common set of rules.

Iain Couzan, Director of the Max Planck Institute for Ornithology and Chair of Biodiversity and Collective Behavior at the University of Konstanz in Germany, wrote three general rules which can be used to create swarms: each individual is only aware of adjacent organisms, all individuals have a tendency to line up, and all individuals are attracted to each

other (up until a certain minimal distance). Using these rules, every bird in a flock is effectively looking out for the others: if even one bird can see a threat, all birds become aware of it even if they cannot individually see it.

Perhaps the most famous example of entrainment in humans is the Millennium Bridge's opening on June 10th, 2000 when 2,000 pedestrians crossing the bridge at a time caused it to sway. The shared surface of the bridge made the pedestrians walk in sync with each other, which caused the bridge to sway, which forced the pedestrians to walk even closer in sync with each other just to maintain balance. Metronomes, humans, and all of nature is prone to organization. We are naturally inclined to sync up with our surroundings.

Music can be thought of as a medium of communication by which musicians entrain with each other. An example of this is the ease by which people can match a pitch with their voice. But it is perhaps more important for musicians to rhythmically entrain. With each other and with "the grid".

The grid is a visual version of the metronome which refers to how Digital Audio Workstations (DAWs) visualize music. In most DAWs tracks are laid out vertically across the y-axis and time is represented in measures across the horizontal x-axis. Measures (whose temporal length is determined by the songs' bpm) can be substituted for time in minutes, but it is important to note that seconds are 60bpm (beats per minute) clicks. In a DAW, all audio is represented as wave forms on the grid and all songs are either on the grid or off the grid. Most DAWs allow for the bpm of a song to be automated, allowing artists to deliberately write in tempo changes.

This is probably how Radiohead recorded *Paranoid Android*. the first half of the song sits at exactly 81.8 bpm, switching between a 4/4 time signature (four quarter notes per measure) and a 7/8 time signature (seven eighth notes per measure). Then the song slows down to exactly 62.8 bpm around the 3:33 second mark. The outro returns back to 81.8 bpm. The song is dynamic and metronomic. Its tempo changes but it is always exactly playing whatever tempo it is in. I am sure that Radiohead recorded to a click. The click was the common surface, the wobbly table, by which they were able to entrain though out the complex time signature and tempo changes of the song. I'm also sure that the members of Radiohead are able to entrain with each other without a

click—but even the most famously tight and “pocket” bands can never achieve the sheer precision which is found in *Paranoid Android*.

James Brown and his bands created what is perhaps the tightest music of all time. James Brown was a notoriously tough band leader. Tough on his bands and tough on himself. All of popular music today can be thought of as his child. Hip-hop was born out of samples of his music and the music of musicians in his bands. His music has been sampled over 7,400 times: more than any other artist. But his music is not as metronomic as Radiohead. It does not lie on the grid. Chuck D of Public Enemy once said: "To this day, there has been no one near as funky. No one's coming even close."

James Brown made music and recorded in an era before the grid. His bands did not listen to a click while they recorded. He is so undeniably funky, but even the most amateur rock bands of today could easily record more metronomic music than him by simply playing to a click. But they couldn't play tighter than him. It doesn't matter that his music wasn't synched to a metronome because his bands and him were perfectly entrained with each other. He made sure that every musician in his band had impeccable rhythm in the way that it mattered: in their internal clock and their ability to listen to each other. The grid is a tool; it is secondary to the experience of music. James Brown's music undoubtedly has an impeccable inner clock.

There is some music which has almost no objective tempo. Which changes tempo so wildly and frequently that it is hard to believe any of it is deliberate or thought out. Jimi Hendrix's *Bold as Love* is such a song. Hendrix is my favorite guitarist of all time. And *Bold as Love* is one of my favorite songs of all time. But the song changes tempo every couple of seconds. Not like James Brown who drifts by maybe five bpm over the course of two minutes. And it's not like Radiohead who deliberately and exactly change tempo. *Bold as Love*'s intro starts at 127 bpm and fluctuates up and down in tempo by about ten bpm. Then when the band comes in it jumps up to 146bpm. I don't believe that Hendrix thought through or wrote out these tempo changes. He felt the tempo changes. And then he played exactly that tempo which he feels. He is not trying to play metronomically, he is feeling the speeding up and slowing down. And then he is playing in that feeling with absolute precision.

All good music is out of tune and out of time. In his essay "*Participatory Discrepancies and the Power of Music*", Charles Keil writes: "The power of music is in its participatory discrepancies, and these are basically of two kinds: processual and textural. Music, to be personally involving and socially valuable, must be 'out of time' and 'out of tune.'" (Cultural Keil, page 275).

I most clearly see this truth which Keil states in swing. Swing the foundation of funk in all music, not just jazz. Radiohead, Jimi Hendrix, and James Brown all play music with swing. Swing is vague and yet precise. It fluctuates in bpm on a micro scale but still lands on the beat. No good music is completely straight. Even electronic or house music, which literally puts a kick on every quarter note, has some swing to it. Oftentimes swing comes through in vocal samples: language always creates swung rhythms by the uneven timing of spoken syllables. The beat which I like to practice to a metronome with is not a swung beat. I try to play as metronomically and straight as possible. And as a consequence, I do not sound funky nor good.

I do not practice with a metronome because I want to become a better drummer. I practice with a metronome to practice focusing. To practice pretending that the world is objective. To meditate. Making art is about making the objective subjective and the subjective objective. The metronome is objective, but in listening to it I transcend. It is a mantra which frees me from physicality, from objectivity. For me, the chaos of the universe is easy to accept. I know that the ever increasing entropy of the universe is inescapable. When bad things happen to me I cope well by knowing the extent of my fault is largely overshadowed by the infinite largeness of the chaos which controls my life. When I am faced with hard choices I keep my anxiety in check by remembering that I am truly powerless. The only response to the daunting inescapability of chaos is a shrug.

But order is an inescapable force of the universe too. And it is an essential part of being an artist. In organization we don't only have power, we have a responsibility because everything that we do affects every other human on earth. We are all metronomes who share one big wobbly table.

Bibliography:

Keil, Charles. Participatory Discrepancies and the Power of Music: "Cultural Anthropology", Aug., 1987, Vol. 2, No. 3 (Aug., 1987), pp. 275-283