

DURATION AND DANCING BEARS: HALBERSTADT'S CAGE, INGE'S BEETHOVEN, ZIMMER'S PIAF AND PITTSINGER'S BIEBER

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This brief paper is a meditation on the technology and cultural resonance of duration-stretched sound.

Still sound is an oxymoron. Sound, as a vibration, is deeply intertwined with time and must move through it to exist at all. People express many of the properties of sound and music in terms of time: time signatures, cycles per second, beats per minute and so on. Unlike the visual component of motion picture film, which can be stilled to extract the atomic image of a frame, or of video, which can be electronically or photographically coaxed into forming a still image, stilling a sound effectively kills it; an oscillator cycling at 0Hz is utterly silent.

However, this dependence on time for existence does not render sound immune to the alteration and manipulation of its silent but necessary partner; instead, the manipulation of sound in time is probably as old as the intentional production of sound itself. Changing tempo for emotional effect was a common strategy in folk music around the world long before being codified in the 'accelerandos' and 'ritardandos' in the scores of European composers of the 18th century. Somewhere in the history in between, the medieval French composer, Pérotin Magister may have been the first documented practitioner of 'slow sound.' In the 12th century, Magister arranged liturgical choral music by extending the syllables of the melodic lines of well-known pieces in time and then inventing new, faster-moving lines as a sonic overlay on top of them.

It was only when technologies eventually emerged not only to describe music through notation, but also to actually record sonic events for later reproduction that a more direct manipulation of sound in time became possible. According to Caleb Kelly, in *Cracked Media: The Sound of Malfunction*, [1] by 1922, French composer Darius Milhaud was experimenting with varying the speed of phonographic turntables; perhaps earning him the title of first 'turntablist.' The comedic effect that could be obtained by speeding up a recorded sample (transforming tenors into sopranos, for instance) originating in public phonographic performances around that time would eventually blossom (or metastasize, depending on your perspective) in 1958 with Ross Bagdasarian's *Alvin and the Chipmunks*, whose accelerated vocals would go on to win five Grammy awards; three of them on the first-ever night of the event. Slowing a recording down, conversely, can evoke feelings of gravitas, sadness or even 'spookiness.' A 2007 study entitled "Does Time Really Slow Down during a Frightening Event?" by David Eagleman and his team, psychologists at Baylor School of Medicine, examined the perception of slow motion often reported in situations of crisis and found that, when sufficiently frightened, peoples' memories get kicked into overdrive, recording minutiae that would otherwise be ignored. This high density of detail in memory, when recalled, is felt as 'duration dilation.' Early ethnomusicologists, armed with decidedly lo-fi recording phonographs, often employed the practice of significantly slowing down playback for the rather practical reason of allowing them to more accurately transcribe and analyze the structure of the music, songs and spoken words they had captured in their ramblings afield. [2]

These intentional and incidental emotional effects produced by altering the playback time of recorded sound samples are due almost exclusively to the unavoidable pitch shifting that co-occurs with changes in the speed of analog playback; since frequency and speed are intimately entangled, increasing the

speed of playback of an audio recording also raises its pitch, while slowing down the playback of a recording lowers the pitch. This relationship is perfectly linear and direct: slowing down the playback to one-half speed results in the pitch of the sound dropping to one-half the original frequency. In September of 1967, American composer Steve Reich fantasized about completely severing this time/frequency relationship, which he elucidated in a conceptual score entitled *Slow Motion Sound*. The score consisted of only one sentence: "Very gradually slow down a recorded piece to many times its original length without changing its pitch or timbre at all." [3] In the late 60s, he considered this score to be strictly a thought experiment, since no readily available technology was capable of such a feat. In fact, the *Phonogène Universël*, a tape machine with a rotating play head developed three years earlier by Pierre Schaeffer in Paris, may have had some success at partially realizing the score, but Reich was apparently unaware of the existence of this exotic European device at the time.

However, even the advent of digital audio recording and playback techniques did not immediately provide the means to realize Reich's score. Basic digital re-sampling of an audio source at a different sampling rate (more or fewer slices per unit of time) does alter the speed of a recording, but also preserves the speed-frequency relationship precisely as analog techniques do. Eventually, in the late twentieth century, new digital manipulation methods finally began uncoupling this previously necessary relationship. With the emergence of phase vocoders and fast Fourier transforms (FFT) came pitch-shifting and pitch-corrected time stretching. Much as digital publishing tools had finally divorced content from presentation, these more sophisticated digital sound analysis and manipulation tools were able to separate frequency from playback speed, allowing sound to finally become 'unstuck in time.'

Four twenty-first century slow sound projects, three of which are digital in nature, and one which is thoroughly analog, may serve as an abbreviated survey of contemporary slow sound projects and provide a means for gathering common threads from recent manifestations.

The analog case is a fresh imagining of John Cage's *Organ2/ASLSP (As Slow as Possible)*. Originally written as a commissioned piano piece in 1985, Cage adapted it for the more continuous-toned organ in 1987. The piece, as the title suggests, is meant to be played "as slow as possible" while still maintaining the proportions of the overall musical structure. The duration record for the work performed by a single human is 14 hours and 56 minutes, achieved when Diane Luchese performed the piece at Towson University in February 2009. The pace of the piece was leisurely enough that she was able to take meals, between the chord changes, while sitting at the organ's keyboard. According to the February 5, 2009 article appearing in *The Towerlight Online* by Carrie Wood ("Fifteen Hours at the Organ"), Luchese also had a mechanism for reserving the nearest ladies' room so it would be available for her use when the score called for a rest.

However, even this feat of endurance pales in comparison to an especially slow version of the work now being performed at the St. Burchardi Church in Halberstadt, Germany. In this incarnation of Cage's piece, human performers are second-string; the notes on the pipe organ being sustained through the needed long durations by the suspension of weighted bags from the keys. The Halberstadt organ is being assembled, pipe-by-pipe, as new voices are required for the piece, but there is no great urgency to the construction. The performance, which began in 2001, is slated to last for over six centuries with notes changing only every few months or years. Crowds gather in the church on note change events, but the organ sounds continuously whether there is an audience or not; the accidental audience of people living nearby the church insisted that the ever-present drone be tamed, so a box of transparent acrylic sheeting was built to enclose the organ and dampen the twenty-four hour sound. Solar panels and a

back-up generator stand by to power the blowers and continue the performance should the electricity ever be interrupted.

This multi-generational sound piece, with the intended duration of 639 years, plays at the extremes of what counts as perceptible time for humans, requiring planning that may exceed seven consecutive lifetimes. However, it does not alter the actual sound *as produced* in time. The sound of the organ itself is like that of any organ and, more importantly, the transitions between notes occur exactly as if the organ was playing a short 'scherzo.' This piece, though very slowed-down indeed, does not directly relate to Reich's 1967 concept. Instead, this staging of Cage seems to point to the notion of duration itself and the kind of organization and optimism and required by humans to contemplate the launching of a project that will not even be half complete within their grandchildren's grandchildren's lifetimes.

The second work is Hans Zimmer's *Inception* soundtrack, specifically the remix (or re-synthesis) of deeply slowed fragments of Edith Piaf's 1960 recording of *Non, je ne regrette rien* (*No, I have no regrets*) used for the signature 'idée fixe' of the film's soundtrack; as well as some clever sound design strategies employing slow sound as markers for transition points.

The relationship between the Piaf song and the *Inception* soundtrack was first demonstrated via a YouTube video uploaded by user camiam321 in July 2010; which by June 2011 had been viewed over 2.5 million times. [4] Other videos soon appeared that also showed graphically how similar the structure of the soundtrack was to a slow version of *je ne regrette*. In addition, slowed down sound cues were used to sonically signal the transition points in the matryoshka-like nesting of the plot's dream levels. Each of which, in the logic of dreams, possesses its own ever-more-tightly coiled time line. Here the slowness is used almost diegetically to express the dilation of time in the upper levels of reality and the techniques employed begin to resemble the ideal decoupling of time and pitch. However, the method Zimmer uses is not so straightforward; and in interviews he hints that the slowness was more a piecemeal reconstruction than a just a slowing down of existing material.

To delve further into the structure of slowed sound, we turn next to the Norwegian Leif Inge's amusingly named *Nine Beet Stretch*. Not unlike the Halberstadt Cage piece, *Nine Beet Stretch* is, first and foremost, a conceptual piece. Inge says he was inspired by Douglas Gordon's *24 Hour Psycho*, [5] in which the Scottish media artist slowed down the infamous Hitchcock film's frame rate until it stretched out to fill a full 24-hour day. While Gordon's work was silent, Inge's most certainly is not.

By slowing down a single recording of a performance of Beethoven's *Ninth Symphony* and stretching it out to more than twenty times its usual performed length without affecting the pitch, Inge reveals a whole universe of microscopic sound and simultaneously makes good on Reich's original idea of slow motion sound. In Inge's piece, tiny sonic events that are quickly overwritten in the mind at normal speed are free now to develop, bloom, spread and skid off in uncertain decay. Close harmonies that create moments of tension in the real time of the original are transformed into long grating passages of dissonance. From my own listening experience, the melody is impossible to follow at this speed, becoming completely unrecognizable – lost both in the microstructure of sound and the failure of my attention; the extreme duration breaking down any notion of 'persistence of hearing.' Even as smaller structures come to the fore, there is an overwhelming sense of blurring, of wobblingly indeterminate beginnings and endings. One of the seeming virtues of *Nine Beet Stretch* is making the familiar strange: critical reception praised Inge for again making it possible to listen to and enjoy a piece that, for many, had become so familiar that it was no longer possible to focus on the sound. [6]

Finally, I would like to consider Pittsinger's glacially paced version of the pop song *U Smile* by Justin Bieber. Slowed down approximately 87.5% (not the widely repeated 800%!) by a piece of clever open-source software written by developer Nasca Octavian Paul and released as *Paul's Extreme Time Stretch*, [7] a software tool that both fulfills and exceeds the slow motion sound criteria and also greatly democratizes the process by putting a very sophisticated fast Fourier transform based stretching tool into a small, free easy-to-use package that requires no hardware more exotic than a standard personal computer to run.

The slow Bieber piece, originally posted by Pittsinger on SoundCloud.com, a 'read-only' sound sharing service, is remarkable mostly for huge number of auditions and comments it received. As many were later happy to demonstrate, virtually any piece of complexly structured audio (such as a carefully produced pop tune) would produce the same species of dreamy, textured soundscapes that *U Smile* did (and, conversely, that speeding up standard time dreamy soundscapes, like the work of Icelandic band Sigur Rós, did not produce Justin Bieber-like results). Perhaps the most significant effect 'Bieber 800' had, beyond giving producer Pittsinger ("Shamantis") a good deal of exposure, is that it started many smart people, including Harold Schellinx at *SoundBlog* [8] and Mark Weidenbaum at *disquiet.org* [9] (both writers to whom this paper owes a great deal) tracking backwards across the historical landscape of slow sound and thinking about the future of audio production.

The story of the twentieth century has largely been one of acceleration. From the physical (the midnight ride of F.W. Marinetti, the Bonneville flats, the four-minute mile, the V2, the Concorde, the Shinkansen and TGV, and even reaching the escape velocity of the earth itself from Baikonur and Cape Canaveral), to the informational (the telephone, satellites, email, and the web): speed was king.

But as we have emerged from the hangover of the millennial party a decade or so later, some of us once again seem to have become profoundly interested in slowness – there are movements in support of slow food, slow cities, slow design and even slow sex.

Perhaps this new-found interest in low velocity is just part of a collective fit of pique because we did not get our flying cars. By which I mean that the beginning of 21st century, so enormously pregnant with visions of the future for so long, has simply turned out to not be how we imagined it. One of our most lauded science fiction writers, William Gibson, has given up setting his stories in the future, because the present is so "science fictional," [10] an extension of his quip, quoted in *The Economist*, December 4, 2003, stated that, "The future is already here – it's just not evenly distributed." Maybe it is the case that we have optimistically leaned into the future for so long, rushing to meet its promise, that we may have run past it without recognizing it. Some of the interest in slowness now seems to be rooted in an interest in pausing and taking stock, to find, deal with and embody all of those futures that have already arrived.

Perhaps some of the interest can be understood in the context of a general breaking away from the formats and structures that have so long dominated recorded music. The temporal limits of 45 RPM, the LP, the cassette and the CD are, along with their attendant marketing and distribution apparatuses, becoming increasingly irrelevant in the time of cheap storage, psychoacoustic compression and high-bandwidth networking. With even a modest portable media player capable of storing days or weeks of music, why not have eight-hour tracks? Furthermore, as storage itself disappears into streaming cloud-based solutions, why have any limits on duration?

In a related thought, I believe the local spike in the interest in slow sound and the DIY movement are related phenomena; the popularity of slow sound may be bound up to a great extent in its astonishing generative capacity. With software like *Paul's Extreme Sound Stretch*, anyone with a computer, a little curatorial skill and the patience for tweaking a few settings can produce their own "ambient epics." [11] With the burgeoning popularity of web sites like instructables.com and thingiverse.com, perhaps the ability to say, "I made this!" will wind up being the majority of the engine behind slow sound.

The idea of the dancing bear, of course, is that everyone is so amazed that the bear dances at all, that there is no discussion of whether the bear dances well; it is enough that the bear dances. The metaphor is an indictment of the triumph of novelty over substance. The ease with which digital tools can now be used to slow down audio, even to absurd lengths, without drastically altering the original pitch is nothing short of amazing – and that it can result in engaging and ethereal textured soundscapes is bound to draw fire from those who produce similar ambient sound work 'the hard way.'

This situation is only a small part of a much larger debate about the ascendancy of the amateur and the celebration of the dilettante, which will without doubt continue long after 'Beiber 800' has faded from all but the search engine's long memories. There is certainly surprise and novelty that something as 'poppy' and heavily produced as *U Smile* could be transformed into something 'transcendent' so easily via even further manipulation. Leif Inge required the talents of a studio of sound specialists and the custom programming of esoteric audio tools (programmers sometimes jokingly claim LISP is an acronym for "Lost in Stupid Parentheses") to pull off his *Nine Beet Stretch*. *Paul's Extreme Sound Stretch*, on the other hand, produces quite good results after less than a minute's download, zero installation and a half dozen mouse clicks. Central to the idea of a dancing bear is not only that the question of the bear's dancing skill does not come up, but also the implicit understanding that the bear could not possibly dance well; we may be amused or surprised, but the bear does not reveal to us anything about dancing.

However, digitally slowed sound may have value beyond its novelty. Certainly, as predicted in many quarters, there has been a deluge of 'Beiber 800' imitators slowing down virtually any imaginable sound who will probably never touch 'slow-downing' software tools after their 15MB of fame. Slow sound, however, whether it be an expression of analog duration as in the 600 year Cage performance, or the visceral experience of using a digital tool like *Paul's Extreme Sound Stretch* to render a familiar melody irrevocably strange, can actually reveal a great deal about listening, memory, sonic emotion and our lived experience of time. If there is a bear dancing here, I would like to imagine him shuffling through a very, very slow but stately waltz.

References and Notes:

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