James Whitehead

Un-sounding music; noise is not sound

SPIEGEL: And what takes the place of philosophy now?
HEIDEGGER: Cybernetics.[1]

Introduction

The provisional title for this chapter was "Noise is more than sound," which is unsatisfactory for a number of reasons. Firstly, it can bring to mind the idea of set theory and Venn diagrams with circles labeled "Noise," "Music," and "Sound" in various configurations, allowing various understandings of "noise," "music," or "sound," though always as bounded, finite objects in fixed and finite relationships to one another. Secondly, the framework in which this appears is "Noise in/and/as Music," which again makes noise into some object, and an object captured "in" music, as if noise is something like a wild animal, a tiger or lion to be caged in a circus. Further, the word "in" is also a culprit, as the big game hunter or specimen collector seeks to put noise into music and noise is effectively tamed or killed in the process. Hence the change in title.

So if noise is not sound, what is it? Two meanings of "sound" are both simultaneously in play here, however now this is not a circle on some diagram, neither is it a beast, nor an object, for I propose that it is not an "it" at all and so even the great metaphysical hunter Heidegger will not find anything, any thing, to cage. (Pun intended.) Noise, noise *qua* noise, is something like infinity; it is neither fixed nor totalizable. Music's relation to it can be understood as being similar to mathematics and infinity, where infinity is the territory or space which mathematics inhabits. Noise is the territory inhabited not only by music but all representation, all signification. The inhabitants are finite signifiers, capable of an infinite play of meaning, though can make no difference to noise's infinite space, subtracting infinity from infinity we are left with infinity.

Meaning, no Meaning

[1] Interview given in 1966, quoted in Frank J. Tipler, *The Physics of Immortality* (London: Macmillan, 1994) p.86.

We have emerged from a period in the history of theory defined by the linguistic turn, in which definitions play in language games and authorities of meaning, authors, and Gods have been reported to be dead. Signifiers are arbitrary; grammatical structures collapse and reform as opposites in texts; musical and artistic structures no longer have meaning but use, a use that has become increasingly entertainment, an entertainment for us. The failure of the philosophy and art of the recent past was the failure to locate any absolute. A continual self-examination and doubt and self-questioning, in which music became a series of experiments, resulted in the abandonment of meaning for the pragmatics of use and a period typified by paranoia of meaninglessness that collapsed into the assured, sensational, empty presence of postmodernity's schizophrenia.

No such disease can be found in science during that period and even through postmodernity, which might account for contemporary philosophy's interest in science as the source of mathematizeable truths. Science did not look inward at its structures but created new ones in its exploration of the great outdoors.[2] Despite the obvious structures in the great achievement of Western music, these structures were never sufficient, never necessary, and so became a victim of metaphysical critique.[3] Therefore, it might be argued that, from Kant onwards, philosophy led art down some garden path to oblivion.[4] The problem of meaning in the arts became very personal, to the extent that its present state could be criticized as nothing other than a cult of personality. Being personal for a moment, I did not engage in that. Because of a quite unexpected set of events, I turned my attention to computer science, where definitions are fixed.[5]

"Noise", a dictionary definition

[2] I am referring to relativity theory replacing or adding to Newtonian mechanics, quantum theory, and more recent work on field theory of M-Theory and Strings.

[3] For example, "Non-conforming music has no defense against the indifferentism of the mind, that of means without purpose." Theodor Adorno, *Philosophy of Modern Music* (London: Continuum, 2007) p.15.

[4] The path to oblivion or nihilism, the philosophies of Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, et al. It is a nihilism still to be found in contemporary philosophy, for instance in *Nihil Unbound* by Ray Brassier (Basingstoke: Palgrave Macmillan, 2007). Compare this to science in its predictive achievements: for example, the periodic table as it developed showed clearly where undiscovered elements should fit, and as such their structure and properties could be known before any empirical discovery, one of the high positivist moments in science.

[5] No one event in thinking about music and theory made me examine the binary structure of sound files, but a question regarding all pitches combined on an internet board first led me to examine the structure of WAV files in storing sound. A career in computer programming and systems analysis provided the necessary knowledge and access to tools, and then reading the remarkable assertion given at the opening of this piece by Heidegger led me to investigate the world of binary data from a musicological/philosophical perspective.

1.

a. Sound or a sound that is loud, unpleasant, unexpected, or undesired.

b. Sound or a sound of any kind: The only noise was the wind in the pines.

2. A loud outcry or commotion: the noise of the mob; a lot of noise over the new law.

3. Physics: A disturbance, especially a random and persistent disturbance, that obscures or reduces the clarity of a signal.

4. Computer Science: Irrelevant or meaningless data.

It should be clear that definition 1.a allows for an infinite variety of personal expression and opinion, and much has been gained by its exploitation. Postmodern art has been typified by a general destratification, of a heterogeneity of "what ever it means to you is what it means." Noise artists are often characterized by or deliberately make themselves predicated on such a definition of noise, and serve to critique and challenge conformity in the arts and society, even to the extent of ironically challenging themselves. Such expressive freedom, for good or bad, rapidly regresses into itself as a kind of noise. Definition 4 is useful as it allows us to absolutize music by showing that a definition of noise is not possible, because no satisfactory containment is possible for a procedure that is necessarily not containable in any finite structure. Such an absolute and deterministic process arises from the nature of noise in computer systems, which are not subject to the inability of fixing a meaning, as occurred in modernity, or to the relativism of sensation of the postmodern.

Much of what follows is widely known, so I apologize for the pedantic need to explore a little computer science. We do not require a detailed description of the subject except to give us necessary terms for "identity" and "noise" without recourse to esoteric metaphysics or matters of opinion and taste. We need these definitions in order to attempt an objective reexamination of the terms, and from this a radicalizing of the ontology of music.

A simple computer (processor) can only add. It cannot do multiplication, as rather than guess what 7 x 8 is, it simply adds up 8 lots of 7. Furthermore, a simple processor cannot subtract. It achieves subtraction by using complimentary arithmetic, and this process it is how a computer system can "identify" or recognize. Complimentary arithmetic only sounds complex. Here is how you compliment a binary number, for example 0100101.

Step 1. If you see a 0 change it to a 1 and if you see a 1 change it to a 0.

Step 2. Add 1.

That is it. If you do not understand why you should do this it does not matter; neither does your computer.

So

00100101

Becomes

11011010

Add 1

11011011

Now we can perform subtraction by addition. For example if you want to subtract 37 from 52, depending on how you were taught, you will be carrying and borrowing; you will know how to subtract 7 from 2 and 4 from 5. You know many rules the computer does not. You can manipulate the digits 0 through 9. Our processor can only add 0 to 0, 1 to 0, 0 to 1, and 1 to 1. That is all it needs.

Here is the "subtraction" using complementary arithmetic.

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00110100
11011011 +
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0001111
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0001111 is 15 in decimal. If you do not know why or how this worked (and it did; 52-37 is 15), do not worry; neither does any computer.[6] When a computer system does something like recognize a

[6] Why the computer only performs addition and nothing else is part of the "keep it simple stupid" methodology of computing. If you can add, subtract, multiply, and divide simply by addition, then only one circuit for addition is required. Real computer systems may use other additional methods, but they still use Boolean logic that is very simple. Multiple processors and all the other technologies just speed up the process; they do not make it ontologically more sophisticated.

Here is how this "subtraction" is performed: in a 2's Complement number the highest bit is negative.

-128 64 32 16 8 4 2 U

face, it simply turns the data into binary and subtracts (more or less). The logic is simple. If the result of subtracting two numbers is zero, they were the same; any other result tells you they were not the same. This is the cybernetics of identity or recognition!

Often, when you log on to a computer system, a process needs to check if your user ID is the same as the one stored to allow you access. The system needs to recognize your login identity. Imagine your ID is not something like James123, but "J." The computer subtracts the binary value for "J" from all its stored user IDs until it gets a result of zero. J is stored as 1001010 (ASCII 74), so the subtraction takes place as above. If it subtracts your ID from every ID it has and never gets a zero, it will tell you that you do not exist in its system. For real IDs of more than one character it subtracts each in turn, again "recognizing" your identity when it gets a zero result. Although we seem far from definitions of "noise" and "music," we have now a very simple definition of identity. A thing is identical to itself if its negation added to it leaves nothing. Suddenly Heidegger is back in the room, perhaps.

> SPIEGEL: And what takes the place of philosophy now?
> HEIDEGGER: Cybernetics.

Von Neumann Architecture (or "illegal" operations)

The Von Neumann Architecture is how modern computers work. One of the features of this architecture is shared memory. The computer's memory (RAM) is used by Data, Addresses and Instructions. Data: a picture you are drawing, a text file you are editing, a music file, etc. Addresses: these are pointers the computer uses to find "stuff" in memory and take data there. (Think of an envelope with data inside and an address on the outside.) Instructions: these tell the computer what to do; they are low-level machine code. For example, "take these bits here, fetch some bits from there." The bits could be data, the here and there places in memory. The point is,

```
0   0   1   1   0   1   0   0   = 32 + 16 + 4 + 2 = 52
1   1   0   1   1   0   1   1   = -128 + 64 + 16 + 8 + 2 + 1 = -37
+
-----------------------------------------------------------------
0   0   0   0   1   1   1   1   = 8 + 4 + 2 + 1 = 15
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In this addition the high bit to the left is "lost." On compact disks and in typical sound files the data is held as signed 16-bit integers. This gives a range of +32767 to -32768. If a sound file contains a set of numbers all the same, no change in value occurs, which is in effect silence. There are therefore 65,536 possible silences in this format.

rather than have three types of memory—one for data, one for addresses, and one for instructions—they all share the same space, for technically good reasons. (Keep it simple stupid.) Though this simple idea is efficient, problems can occur when data, addresses, and/or instructions get muddled.

A “typical” section of code might look like this:

Instruction	Data	Address
Do this	to this	from here or send it here

Each would consist of Bytes made of Bits of fixed length (typically 8, 16, or 32).

0101001010010000 11100001101010110 100101010001010

However, there is no way of knowing what 11100001101010110 means in isolation. If it is in the first part, it is an instruction; in the middle it is data; and if it is at the end, it is an address. The computer treats whatever arrives in its processing unit as such. If a bit goes missing then

0101001010010000 11100001101010110 100101010001010

becomes

101001010010000 1 100001101010110 1 00101010001010 + ?

Now the instruction starts with a 1 and uses the first bit of its data section to complete the instruction. The data now has a missing bit at the beginning and uses the first bit of the address. If the “new” instruction does not exist, 1010010100100001 is not recognized and the computer will not be able to continue. This is an illegal instruction! If the “new” address is not correct, this is an “illegal” address. If the data is altered, then the text file or MP3 or picture will have nonsense or rubbish at that place. Here is a simpler example using text.

TAKE THIS HERE

TAKE = Instruction or Operation Code
THIS = Data
HERE = an Address in memory

We lose the first part of the instruction, so now have:

> AKET HISH ERE?

The T is lost, but the T from THIS is used to make up the gap, and so on. AKET is not a task we can perform, HISH is not recognizable data, and ERE? is not a recognizable place. We have nonsense, chaos, noise. This is how errors of "executing data" that is "executing code from a non-executable memory region" can occur.

By way of proof, an actual example. Below, the Microsoft Explorer program crashed trying to write data to a place in memory. This caused an "exception," a problem that the program could not handle, and so the operating system, in this case Windows NT, gives the message:

> Unhandled exception at 0x0a153739 in explorer.exe: 0xC0000005: Access violation writing location 0x090afc40

If we look at the place in explorer.exe where this occurred, we see:

Address	OpCode Meaning	English!
04893739	movd dword ptr [edi+edx],mm2	move some stuff
0489373D	psrlq mm2,20h	shift some bits left
04893741	movd dword ptr [edi+edx+3],mm2	move some stuff

The example above shows memory in which an opcode, an instruction, tried to move some data into an area of memory it should not. Either this address in RAM (memory) was not there,[7] or this process (program or application) did not have the rights to do this (the location was being used by another process, for instance). Once the context of the bit string is lost, it effectively becomes noise. Such noise causes the program to fail. Coherence, structure, and meaning are lost.[8]

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[7] By "not there" it would be that the address generated is larger than the address space of the computer. If you have a street of 100 houses, you cannot send a letter to number 145.

[8] This might clarify some problems with interpretation in the arts. Saussure established that in language signs are arbitrary, and this was further developed by Derrida in *Of Grammatology* to argue that language worked as a play of differences without any one or set being privileged. There is nothing with the letters "C" "A" "T" that is catty: CAT

Such a definition of noise from within computer science defines noise as essentially destructive and not as some effect or affect.

The correlationism of Music

One of the features of a certain group of contemporary philosophers—labeled variously as Speculative Materialism, Speculative Realism, Object Oriented Philosophy, or Object Oriented Ontology—has been a critique not only of postmodern and continental philosophy but also of Anglo-American analytic philosophies, identifying "correlationism" within all of these philosophies.[9] Their activity has been closely associated with the arts as was the continental school that they critique. The idea of correlationism effectively critiques all philosophy since Kant, and identifies Kant not as the originator of a Copernican revolution in thought but rather as a reactionary Ptolemaic in his unwillingness and prohibition against thinking "The Real."[10] The justification for this critique is a debate to be had in philosophy and not here. However, I want to employ the same correlationist critique of philosophy to music. Philosophical correlationism can be summarized as the idea that philosophical thought, properly metaphysical thought, never has access to the real, to things in themselves, but it has access to—in fact it is the correlation between—

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and DOG could be interchangeable for what they signified. Or in Albanian QEN and MACE, which is CAT and which is DOG? In effect, it has been said we are all speaking "dead languages" (Brassier, Lacan, et al.). There is nothing inside the text to give meaning (and the text here could be an image or a sound structure). Further, it has been argued there is nothing outside of the text that can provide it with a fixed definitive meaning. Famously, "il n'y pas de hors-texte," (Derrida, *Of Grammatology*), by which there is no arbiter of a fixed and final meaning of a text—not the author, nor a psychoanalytical or metaphysical theory of interpretation, nor God. "The semantic horizon which habitually governs the notion of communication is exceeded or punctured by the intervention of writing, that is of a dissemination which cannot be reduced to a polysemia. Writing is read, and 'in the last analysis' does not give rise to a hermeneutic deciphering, to the decoding of a meaning or truth." Jacques Derrida, *Limited Inc* (Evanston: Northwestern University Press, 1988) p.20.

[9] The field variously known as Speculative Materialism, Speculative Realism, Object Oriented Philosophy, or Object Oriented Ontology (OOP, OOO) originated as "Speculative Materialism" from a conference held at Goldsmiths College, University of London, in April 2007. The members of that conference (and others), as the numerous titles above indicate, are not so much a "group" or "movement" but instead philosophers who have an interest in a metaphysical realism as critique of the dominant forms of post-Kantian "correlationist" philosophy. Original conference members were Ray Brassier, Iain Hamilton Grant, Graham Harman, and Quentin Meillassoux.

[10] "[T]he central notion of modern philosophy since Kant seems to be that of correlation. By 'correlation' we mean the idea according to which we only ever have access to the correlation between thinking and being, and never to either term considered apart from the other." Quentin Meillassoux, *After Finitude* (London: Continuum, 2008) p.5.

thought and its object. It is only in the correlation that we can ground a philosophical necessity, an absolute and objective knowledge.

> "Thoughts without content are empty, intuitions without concepts are blind. The understanding can intuit nothing, the senses can think nothing. Only through their unison can knowledge arise."[11]

It is a gross simplification to say we only experience our perception and never what exists outside our perception and therefore cannot know anything of objects but only have knowledge of our experience of them. Key to human experience are Time and Space, but these are, in correlationism, not real things but merely the necessary constructs for us as humans to experience both the outside world and our inner consciousness.

> "[T]ime is nothing but the subjective condition under which alone all intuitions can take place within us."[12]

Meillassoux *et al*. want to reject this correlation in favor of access to the Real, which science seems to have enjoyed, unlike philosophy, since Kant, and one of their main motivations is to combat the relativism of post-modernity, a relativism similar to the first dictionary definition above of noise as a matter of taste and opinion.[13] Regardless of philosophical correlationism, it appears so obvious that art exists as a form of correlationism that the idea is often ignored, for correlationism *appears* to be an essential a priori necessity that constitutes what art is.One of the consequences of a radical regard to noise and its relation to music is that it exposes and breaks that thought. Alternatively, noise can safely be regarded as one more trope or ingredient for music, perhaps even a dangerous supplement, but one that does not question music's ontology. Crucially though, if this ontology is questioned then not only is music radicalized but also all of the arts. It is from the radicalization of music by noise that a general radicalization of representation might be achieved.

There are numerous theories of art, however most if not all posit an object and a subject, and the status of the object's art-ness is not something located in the object but instead in the nature of the

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[11] Immanuel Kant, *Critique of Pure Reason* (London: Penguin, 2007) p.86. (A51 B75).

[12] Ibid., p.69.

[13] "[M]athematics' ability to discourse about the great outdoors; to discourse about a past where both humanity and life are absent." Quentin Meillassoux, *After finitude,* p.26.

relationship between the object and subject.[14] Music is heard, paintings are seen. Music is played, paintings are painted. Duchamp's urinal or Cage's silence exist in and because of this correlation. In fact they expose it, rely on it, and work with it. In Duchamp, the context provides the status of art. Cage's *4'33"* presents the impossibility of silence as an impossibility for us in our experiential relationship within the performance. Philosophically, the tree falling in the forest may or may not make a sound. No such dilemma exists in *4'33"*—there will always be sound. It is no surprise when Meillassoux posits a time before human thought and a time after. When likewise he proposes existence prior and post *Homo sapiens*, even the idea of existence and temporality where no cognition exists at all seems acceptable. However, if we move the claim from philosophical ontology to music, we arrive at something quite radical and contrary to the Cageian, correlational ontology of music. Music where no human exists to create the correlation is a very radical idea of music; the idea of non-correlationist music might appear impossible or absurd. We may think of the possibility of noise outside of a human correlation and outside of cognition: it may be debatable but it would not be ontologically impossible, otherwise no debate could take place. Therefore the acceptance of noise as music can either simply ontologize and make noise part of a human correlation or radicalize music itself by destroying its ontology. A choice needs to be made, but before it is, it is crucial to explore just what is at stake.

It would, I think, be difficult to maintain absolutely that sound is only a correlation. To propose that music existed before human thought and will exist after is much more contentious because music is accepted as the correlation in which humans must take a part.[15] Cage's silence is an impossibility for us, but not an impossibility per se. We have a precise analogy between Kant's *phenomena* and *noumena*, the latter existing independently of us yet, for Kant, absolutely removed from us. Cage is a Kantian and the Speculative Realist would want to challenge this thought. The Speculative

[14] Typically, the subject is human, but this is not necessary. Birds, whales, and other sentient creatures may and probably do engage in music, according to some theories, but the engagement is still essentially the correlation between a subject and an object. Furthermore, musicians have historically found such "musics" of interest, including the more recent genre of music using field recordings.

[15] Sounds are vibrations and exist in much wider spectra than human hearing. Music may be distinguished only by having air as a medium. Though sounds are found in other media such as water, they are vibrations, as are the electromagnetic spectra where vibrations exist, which are impossible for humans to hear and are independent of any medium. To define sound as only that which humans can hear seems very anthropocentric at minimum and fraught with problems too extensive to explore here. Even if sound is so restricted as to require a medium, "noise" cannot be. Noise occurs in radio transmission and communication and computation. There is cosmic noise that is completely independent of any human correlation.

Realist could simply say that it is not at all contradictory to imagine or postulate a time in the far future where no particles vibrated and energy was at its lowest state, so no processing could occur, and that would be a *de facto* silence. Ones that are more trivial also exist, for instance absolute zero.[16] Therefore, there can be silences, but we can never perceive these because we cannot perceive non-perception. We can think noise outside of perception, outside of a correlation. It exists in any system as an unwanted possibility, which is why noise *qua* noise is always unwanted even in the arts because it destroys the correlation, or, if used at all, it is used to achieve some destructive act in a very careful way. Noise *qua* noise is more than a dangerous supplement, for in any correlationist idea of art, without applying a limit noise is destructive and fatal. The application of a limit renders noise as a token or symbol, for instance of nihilism or anti-art. However noise in-itself is more radical as it effaces the possibility of any symbolism at all (just as the noise in our simple computer system above crashes the system). Noise *qua* noise is not the elephant in the room but the tiger, and being free in the room and not in some cage (noise as …), it will devour everybody and everything. What is unwanted in music? What is unwanted is total silence, total chaos, or timelessness (time before and after human life). What is required? Human musicians and audiences, an atmosphere of 78.09% nitrogen, 20.95% oxygen, 0.93% argon, 0.039% carbon dioxide, and vibrations within this medium in a frequency range of 12 Hz to 20 kHz and of durations greater than about a second and less than a human lifetime. What this correlation does is make music, as it exists now, an incredibly small fraction of the known universe. There is in principle nothing wrong with this, unless any claims are made that this music represents the Real. In the known universe music as such can only picture the Real as a gross distortion, not withstanding other possible universes and infinities.

Two simple illustrations.

An American tourist visits Europe and as they pass from country to country stay in Holliday Inn hotels, where curtains remain closed and they watch CNN. They return and though they have visited Europe and can describe it to their fellow Americans, and though we might think they have acted strangely if not stupidly they have done nothing wrong. They might have noticed the pasta was better in a place called “Italy”, which would be a metaphor for certain desires to use noise in

[16] I can modestly lay claim to 65,536 silences in digital PCM data as stored in computer systems and on compact disks. Any set of data that results in a continuous D.C. offset is, in itself, “silent.” *Jliat – Still Life #5: 6 Types Of Silence* edition xi, released 2000. Also 10 seconds of all 65536 possible silences on audio CD can be downloaded from http://www.jliat.com/silence/

music, but we would not consider that they have experienced or even attempted to experience Europe. A counter argument might be that as it is impossible to fully experience Europe (or anything) then the action was justified. This would certainly curtail any science, and much of previous artistic practice, and might be the cost of rejecting or "caging" noise in music. An encounter with Europe would involve an encounter with foreign languages which would be an encounter with noise.

The above is a fiction, a second example is that of Audio CDs. They represent a totalizable set of objects, a set "for humans" if they were to 'hear' not just that which is familiar, would consist mostly of unrecognizable noise.[17]

What the loss of the human correlation as music would produce is impossible to define. It is possibly infinite or as large as the known universe and has a temporality of at least trillions of years. How it would be produced and perceived or known is likewise not limited. The alternative I can predict with certainty: if noise is made into music it will become sound, vibrations in air of given frequencies and given length made for humans and in the main by humans.[18]

From the brief description of computation we can use a definition and very trivially identify music —"A thing is identical to itself if its negation added to it leaves nothing." However, also from

[17] "All possible CDs" is a thought experiment. An audio CD stores music by patterns of bits; each audio sample is 16 bits, and each second of sound has 44100 samples, so 16 x 44,100 gives us a second of sound. Multiply by two for stereo, and then by 60 for a minute, then by 74 for the old specification of the maximum duration in minutes of an audio CD. (The fact you can get longer and different formats is for my purpose irrelevant here.) Multiply 16 x 44100 x 2 x 60 x 74 and we get 6,265,728,000 bits. What follows is that, in this CD format, there are $2^{6265728000}$ possible CDs, and no more. Much of this universe would appear for us as noise, yet "noise" would be more representative of its reality.

[18] This includes not only music with animals as sources—for instance, whale song mediation discs—but also objects such as computer generated jazz (http://www.youtube.com/watch?v=P-Sjgn78rgw) or generative music in general. For example, "Tiklbox composes an endless stream of high-quality beautiful ambient music ideal for relaxation, reflection, meditation & quiet contemplation." (http://www.intermorphic.com/ accessed 28/02/2013) Or, similarly, "Scape makes music that thinks for itself. From Brian Eno and Peter Chilvers, creators of Bloom, Scape is a new form of album which offers users deep access to its musical elements. These can be endlessly recombined to behave intelligently: reacting to each other, changing mood together, making new sonic spaces. Can machines create original music? Scape is our answer to that question: it employs some of the sounds, processes and compositional rules that we have been using for many years and applies them in fresh combinations, to create new music. Scape makes music that thinks for itself." Brian Eno, Peter Chilvers. (http://www.generativemusic.com/ accessed 1/03/2013)

computer science, the definition of noise precludes its definition, as "noise causes the program to fail…" Computer science defines noise as essentially destructive… coherence, structure and meaning are lost, and so with noise the possibility of identification, limit, boundaries, and rules are lost. This may not be wished for, wanted or liked, but represents the Real in non-correlationist terms. Noise is the Real.

Size Matters

One of the impetuses behind the current philosophical thinking, which is associated with the arts in the form of Speculative Realism and Object Oriented Ontology, is the critique in the sciences of an egocentric universe (one more step from a logocentric, and phallo-logocentric universe of the previous philosophemes). Meillassoux and Brassier note that science has revealed a universe far larger than humanity, a universe 300 billion years old with a future of trillions of years.[19] The contemporary age has, in many spheres, expanded beyond human perception if not comprehension. Trivially, in music technology the 45-rpm record dictated the length of popular songs, the LP the "concept" album. Such domestic realities also played a part in structuring classical music through the length of operas or concertos, similarly to the reasons why Dutch paintings of the 17th and 18th centuries were small enough to fit into Dutch bourgeoisie houses, unlike the majestic canvasses of the Louis XIV epoch in France or the massive abstract expressionist paintings of the large lobbies of Manhattan office buildings in the last century.[20] However, just as the trillion escapes us, so does the present day storage capacity of the media around us. It is not unusual to have in a home terabytes of storage, or on these devices music, which, if it has not already, will soon assume a temporality greater than that of any potential listener's life expectancy. The same could be said of

[19] Trillion is the new million! The recent economic crisis has exposed this inhuman number. It is possible to live long enough to count to a million, even a billion, but not a trillion.

[20] "Sony had initially preferred a smaller [audio CD standard] diameter, but soon after the beginning of the collaboration started to argue vehemently for a diameter of 120mm. Sony's argument was simple and compelling: to maximize the consumer appeal of a switch to the new technology, any major piece of music needed to fit on a single CD…Beethoven's Ninth Symphony was quickly identified as the point of reference—according to some accounts, it was the favorite piece of Sony vice-president Norio Ohga's wife. And thorough research identified the 1951 recording by the orchestra of the Bayreuther Festspiele under Wilhelm Furtwängler, at seventy-four minutes, as the slowest performance of the Ninth Symphony on record. And so, according to the official history, Sony and Philips top executives agreed in their May 1980 meeting that 'a diameter of 12 centimeters was required for this playing time.'" Tim Büthe and Walter Mattli, *The New Global Rulers: The Privatization of Regulation in the World Economy* (Princeton, New Jersey: Princeton University Press, 2011) p.46.

other media, text, or movies, but it is the ubiquity of the mobile phone and the playlists of music that offers an insight into a challenge. This challenge is that no one can listen to it all. And if this escapes our listening, it breaks the correlationist grip in a practical demonstration of a real, which is bigger than ourselves, bigger than human perception. We already know that sound shares characteristics with a larger electromagnetic spectra, and over 100 years ago synesthesia was an important influence in the development of a modern art that envisaged a unification of meaning across forms, but this was always "for us," it never escaped us. And when science did escape our common sense and human world, it left a kind of alienation in being as expressed in the arts,[21] or worse a return to a fundamentalism, so a symphony orchestra appears to operate by some laws that are more *sharia* than scientific.

There are works that challenge human temporality in listening, amongst others the artist Mattin's recent work[22] is over 40 hours of MP3 recordings, and there are and have been practices that challenge accepted the conventions of musical forms and durations.[23] However, these works in the main remain correlational in an explicit or implicit "human" correlation, by which they work as art. Temporality normally corrals music into what is "listenable" and regards anything outside this as outside of a possible listening experience, as data that can provide us with no meaning, as noise. Working with temporality in music as a "real" timescale, not merely human timescales, would require a radicalization of musical form even if still limited to sound. We might have to abandon the correlationism of listening, playing and making for other methods, and these are now available.[24] It might be that such realities can be experienced only conceptually and imaginatively,

[21] See the influential "The Two Cultures" of C.P. Snow (London: Cambridge University Press, 2001 [1959]).

[22] *IMPROKUP! Improvisation as squatting and living together* (DVD and booklet, w.m.o/r 38, Stockholm, 2012)

[23] For example, *ASLSP* (As SLow aS Possible) by John Cage is 639 years, *Longplayer* by Jem Finer is designed to last for one thousand years, or the prolific output of noise artists such as Merzbow. There are also examples of "non-sonic music" in the work of Yoko Ono, Karlheinz Stockhausen, and recently Seth Kim-Cohen and numerous others. However, the idea of sound, human temporality, and music in some form of correlation still predominates and limits the art form.

[24] MP3 is a method of compressing sound files. It is "lossy" in that parts of the original sound are lost during compression. What makes working with the MP3 format special is not this feature, but instead that, unlike other formats (WAV, MP4, etc.), MP3 files can be spliced together as larger entities. The ability to combine these in a quick and simple way makes the creation of large structures very simple, almost like the process of DNA synthesis. At its most simple, if you have a folder containing some MP3 files, in Microsoft Windows using the DOS Copy command it is possible to concatenate these into one large and playable file. For instance, Shell into the DOS command prompt and in the MP3 folder type "Copy /b *.MP3 big.MP3" (without quotes). Big.MP3 will now contain all the other MP3s in one playable file. It is then simple to create tools with which it is possible to generate and manipulate sound files of

only in the imagination that such territories can be traversed. Now I can hold in the palm of my hand sufficient storage capacity for over seven years of music.[25] Ten of these devices give us an un-listenable volume, but one that is by all means an objective reality, and the data in the real world that exists in data farms far exceeds any single human experience.[26]

Do we regard this externality as unreal for us, as not sensible, and in its incomprehensibility as noise, or can we find other methodologies for the appreciation of spaces and sizes that are greater than the human? Science has already done this, and the philosophies above attempt the same. The philosopher Laruelle also has a "Real" that is seemingly limited to the human, yet employs a generic matrix that is infinite and incomprehensible.[27] Meillassoux's contingent hyper-chaos, which offers a potential exo-human infinity in his subsequent work, reverts this back to the human scale of possibilities as the source of some future grieving deity,[28] however the hyper-chaos generated by the necessity of contingency is not limited to or for the human.[29] OOO philosophies might, in the allure of non-totalizable objects, appear as philosophemes of the Romantic poets, as if the

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lengths impracticable to work with in real time (real time here being real time for humans). http://www.jliat.com/1tb/

[25] http://www.seagate.com/gb/en/internal-hard-drives/desktop-hard-drives/desktop-hdd/ (accessed February 23, 2013)

[26] The total storage capacity in the world is obviously large and expanding, and difficult to estimate, but as of 2011 one estimate gives 295 exabytes. 1,000,000 terabytes = 1 exabyte. Therefore, that is, in 2011, 295 million years of potential sound in MP3 format. If this all seems a little unrealistic or crazy, it could be because it is, or it could be that we somehow cannot or do not want to comprehend the Real, or what Meillassoux calls The Great Outdoors. If art is to get real, it has to work with these scales, because they are there.
(http://www.computerworld.com/s/article/9209158/Scientists_calculate_total_data_stored_to_date_295_exabytes, accessed 23/02/2013 13:23)

[27] Laruelle's work with Non-Philosophy offers an alternative approach to radicalizing music, for instance in the idea of "small thoughts, everywhere and with every individual." (John Mullarkey and Paul Smith, *Laruelle and Non-Philosophy* [Edinburgh: Edinburgh University Press, 2012] p.1.) Briefly, the "Non" here is not a negation but similar to the Non in Non-Euclidian geometry, which "opened up" mathematics. Jarrod Fowler has developed from this his concept of Non-Musicology (http://www.nonmusicology.com/) ."'Non-Euclidean' became a by word for non-absolute knowledge…Even the concept of truth was not absolute… Mathematics was open-ended, uncompleteable, infinite…" John Barrow, The Book of Nothing (U.K.: Jonathan Cape, 2000) p.157. Music once had a mathematical (Pythagorean) ontology; if this were regained it could become likewise an infinite object.

[28] The necessity of contingency (Meillassoux's proposal in *After Finitude*) is employed as an ethical resource proposing a future deity who can effectively (bring justice) morn victims of cruelty who have died and not been mourned. Quentin Meillassoux, "Spectral dilemma," *Collapse* vol. IV: Concept Horror, Robin Mackay, ed., December 2012.

[29] "Our absolute, in effect, is nothing other than an extreme form of chaos, a *hyper-Chaos*, for which nothing is or would seem to be impossible, not even the unthinkable…. [F]ar from guaranteeing order, it guarantees only the possible destruction of every order." Quentin Meillassoux, *After Finitude*, (London: Continuum, 2008), p.64.

incomprehensibility of these objects is not available to the philosophic mind still bound by a correlationism, or nihilism of life as an existential being. The problematic for philosophers and artists, including musicians, seems to lie in their gaze,[30] a problematic of Petrarch's mountain[31] in looking in the wrong direction into the nature of the subject/object relationship and not into the reality of the object. However, it is now possible to make works of sound that might be considered as music even if they are not only un-listenable in practice but also un-listenable in principle. A simple reaction is to reject this and go back to the cloisters of a medieval universe in music where man is, and always is, at its center, but this is now only an illusion. If noise *qua* noise does come into music as anything more than another trope, it exposes the Real, expanding music beyond the human; how we do this, how we understand it, appreciate it, or disseminate it, is already given by technology.

For want of a conclusion

Through the advent of a cybernetics of sound, which generalizes, democratizes, and personalizes music in MP3 playlists on mobile phones, hard drives, and the internet, music, more than any other medium, has a direct access to hyper-objects, hyper-chaos, territories finitely and possibly infinitely bigger than the human, which is noise as un-sounding music. However, there are strong forces countering the ideas expressed above, of removing the perceptual core of music's ontology. These ideas can be dismissed as fringe phenomena, as peculiar and invalid ideas because they fail to account for the general consensuses that music is predicated on sounds that are heard, that the "real" world of music is listening, that the idea of a non-correlationist Real is contradicted by the reality of listening in the "real" world of music. However, this is not the case. The quantities of data in volumes located on YouTube, Bandcamp, SoundCloud, and elsewhere, though created almost certainly with the intention to be heard, cannot in fact be heard. Human perceptual systems can no longer cope with the scale of these volumes. Any attempt at perception will be fractional, distorted, and always incomplete. Overwhelming the perceptual system effaces communication. This has already occurred. And once quantity overwhelms the system, qualitative judgements are no longer possible.[32] And this also has occurred. Within the world of music, mediators of value and taste have changed from the few to the many, and volume effaces any qualitative ability. In general,

[30] In this case non-Lacanian.

[31] On April 26, 1336, Petrarch climbed to the top of Mont Ventoux from where he could see the Alps. The act is often used as a metaphor for the turning point in which medieval thought is re-directed outward into the real world of nature as opposed to the cloistered inner world of the "Dark Ages," a term he is credited with first use.

[32] This use of noise to overwhelm a system is found in nature and in the military. Herding animals confuses the predator by overwhelming its perceptual ability to make a judgment.

everything published on the web is "Awesome!" Obviously this is not immediately good news for anyone who thinks music has a value, or wants to produce value from it. It is a problematic for manufactures and retailers of music as product, for reviewers of music and arbiters of taste, and perhaps even a problematic for musicological study and evaluation in academic institutions.[33] What has happened to music? Now beyond good and evil?

> "And do you know what 'the world' is to me? Shall I show it to you in my mirror? This world: a monster of energy, without beginning, without end…"[34]

[33] This might also represent a problem for the "artist" as some lone Nietzschean *Übermensch* or Romantic genius, a problem for the artist as anything other than yet another of the numberless pop wannabes?

[34] Frederick Nietzsche, *Will to Power,* (New York: Vintage Books, 1967) p.549.