REVERSE PRACTICE AS TECHNOLOGICALLY CONSTITUTED CRITICAL AFORMALISM IN FOWLER AND YOUNGS' 'STRATEGIES'

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A. TECHNOLOGY VS. MEANING

"In spectromorphological thinking we must try to ignore the electroacoustic and computer technology used in the music's making. Ideally the technology should be transparent [...]"

Denis Smalley, 1997.[i]

What is a transparent technology? If we think of the condition of transparency as that which lets light pass through without changing it, what might transparency mean when it comes to technology? For Smalley[ii] a transparent technology is one that enables meaning to travel through it - unchanged, like light through a hypothetically perfect lens. For me the correla-tion between *meaning* and light implicit in Smalley's transparency metaphor bears discon-certing similarities with the correlation between *truth* and light present in spiritual or religious discourse: light as symbolic of salvation, the soul, or the divine creator.

Smalley (following Schaeffer I think) believes that there are different *kinds* of listening. Schaeffer divided listening into 3 types: causal, listening to the music's cause; semantic, lis-tening to its meaning; and reduced, listening to the music in itself. To these three Smalley adds technological listening, a kind of variation on causal listening. He argues that techno-logical listening happens "when a listener 'perceives' the technology or technique behind the music rather than the music itself, perhaps to such an extent that true musical meaning is blocked". There are a few things going on in Smalley's argument that I want to draw attention to: (1) the reference to background (technology) and thus an unstated foreground (mu-sic/meaning); (2) a thing called music "itself", asserting a theoretical distinction between it and technology; (3) the belief that technology can block, i.e. has a potential opacity that is in opposition to an ideal transparency; and finally (4) that music has a "true" meaning.

According to this account, technology is a carrier of musical meaning and ideally it does not change that meaning as it passes from the author to the listener and, if so, it remains true. I feel that this account parallels some religious discourse… Asserting that the soul is that which is essential to our self and is readily separable from the body, an opposition haunts our particular Western folklore. If we go back a few centuries Descartes's distrust of the body clearly anticipates Smalley's contemporary misgivings about technology. For Descartes the self is composed of pure thought. The body, although intertwined with the mind, should ideally be entirely disregarded. Like technology it is something that only ever gets in the way.

Of particular interest for me is Smalley's suggestion that spectromorphological music has a 'true' meaning that can be 'blocked' if the listener focuses on the means of production. Shan-non and Weaver's classic model of communication (published in 1948) pre-empts Smalley: here technology (the means of communication) is only included as a potential noise source. According to their model, technology is at best imperceptible, and if it is present at all it is necessarily problematic rather than productive.

When I hear these kinds of arguments, I am always a little bit (actually very) confused, be-cause from my point of view most of my favourite music has an inherent and inseparable re-lationship to the thing that produced it: the piano, for example, is very present in most piano music that I can think of; the tabla in Indian classical music; the use of tape delay in some forms of music production; the sampler on early forms of hip hop; and so on… And, what's more, *I really like* these things. I like for example that the sampler, when sequenced and played, makes a sound that is typically the kind of thing a sampler does. Remember *IOU* by Freeez (1983) mixed by Arthur Baker? Those orchestral stabs at the beginning were clearly made with a sampler and are not a recording of an actual orchestra playing those notes; and, at 3mins 5seconds in, those vocal sequences were obviously done on a sampler doing something that samplers make easy: i.e. playing a short snippet of sound faster or slower over a keyboard. For me, the foregrounding of those technical features (piano, tabla, tape, sampler, etc.) do not block the meaning of the music, they add to its meaning.

I like that the sampler is clearly present in sample-based music, and most of my fellow music producers would agree. So why is it that those same producers complain about the tendency of fans who "just want to talk about what software is used rather than the music itself"... Their complaint echoing Smalley's aversion to technological listening? Perhaps it is in part because the habits we use when we speak about music divide music (in essence) from the technological tools inherent in its making. Think of Alvin Lucier's seminal work *I am sitting in a room* (1969). Here a voice is recorded in a space, and then repeatedly played back and rerecorded in the space. It is suggested that the acoustic character of the space is amplified until the voice becomes an indeterminate resonant band that corresponds to the resonance of the space. In any discussions I have encountered about this piece, and in the bits of critical writing that I have read, no one has ever acknowledged the function of the equipment used in that recording. No one has ever mentioned that the tape itself has a dramatic effect on the quality and tonality of the recording, or that the same is true of the microphone and speaker. In fact it would be useful to restage Lucier's piece in two ways - firstly in an anechoic chamber with analogue tape, a microphone and speaker similar to those used in the original; and secondly in a room similar to that used in the original with the highest quality digital recording, microphones and reference monitors. My guess is that the character of the tape-based recording in the anechoic space would display some of the resonance type effects present in Lucier's original work. My point is that the rhetoric surrounding this work acknowledges the function of space, yet ignores the function of technology as central to the character of the piece.

For me this attitude is like trying to hide the cheese in a cheese sandwich. When I order a sandwich made with cheese I would ideally like to taste some cheese. "Sorry sir, Denis Smalley made your sandwich today", would not really cheer me up much because I do not want to eat over-processed food that tastes of nothing (which is basically what Mr. Smalley is saying he wants to do with music). Similarly I would not be very impressed with the chef's excuse, "I tried the cheese sandwich today sir, but felt that the overbearing presence of cheese somehow blocked the meaning of the sandwich in itself."[iii] Pretty silly, yes? But I think this demonstrates how extreme our beliefs get when we talk about the thing we call *technology* and its relation to the thing we call *art*.

Smalley's attempt to place technology in the background is largely contrary to contemporaneous practices in art and music. Peter Gidal's theory and practice of 'Materialist' film, for example, aims to do the opposite: to foreground the processes involved in a works' production. Here the technologies, methods and materials are intentionally unveiled. If Smalley's interest in music 'in itself' suggests we disguise the means of production, Gidal's interest in the material quality of film implies full disclosure. While researching Yvonne Rainer (for another project) I came across an interesting quote on Wikipedia, that cites Rainer's response to feminist Audre Lorde's statement: "You can't dismantle the master's house using the master's tools." Rainer's reply was: "You can, if you expose the tools."[iv] This sense of revealing tools as ideological apparatus corresponds to Gidal's position.[v] Common to both Gidal and Smalley is an acceptance that the technologies and the process involved in the production of work and meaning are never actually transparent - never the obedient servants dreamt of by Varèse.[vi] Although Gidal's way of dealing with the opacity of technology is quite different to Smalley's, I think both view it as somehow problematic: a kind of dirty little secret to be concealed (Smalley) or confessed (Gidal).[vii]

The recordings here to some extent align themselves with the Gidalian position and propose that technology is the place where meaning is made. Like the Scrabble player who arbitrarily rearranges letter tiles to discover possible combinations of letters (rather than merely spelling out a pre-imagined word),[viii] here technology takes an active role in the construction of mu-sical formations that might otherwise be unimaginable. I want to borrow the American phi-losopher Richard Rorty's suggestion that, "the human self is created by the use of a vocabulary rather than being adequately or inadequately expressed in a vocabulary,"[ix] and suggest, against Smalley, that the same could be said of meaning (self) and technology (vocabulary) in this context.

In their reopening of pseudo-obsolete technologies, Fowler and Youngs engage in what I have started to call *reverse practice*. This term paraphrases and parallels 'reverse engineering' in the sense that it promotes an analytical deconstruction of equipment in order to extract knowledge. Reverse practice not only uncovers technical knowledge, but also inevitably revisits the vocabularies and practices associated with those technologies. I think this term nicely corresponds to Fowler's description of "a practical and philosophical meditation on the past, through our contemporary selves" with instruments that are "emblematic of a certain period of experimentation from our musical pasts." But let's be clear that this is not a nostalgic recollection of lost times, as Fowler states: "what underlies the exploration of these out-dated machines is the history of popular culture […] the material history of an instrument and discovering your own way of interacting with it". In this sense Fowler and Youngs' activity can be read as a critical exegesis, one that reconsiders the relationships between musical vocabularies, technologies and practices, and asks how they fit into the subjective and political imperatives of that moment.

If we are to retain the correlation between meaning and light implied in Smalley's transparency-opacity narrative, I think that endless kaleidoscopic refraction is a more attractive met-aphor.

B. ARTISAN VS. INDUSTRIAL AND POST-INDUSTRIAL TECHNOLOGIES

Surely a stereo set, consisting of a turntable, an amplifier, and speakers is a technological device. Its reason for being is well understood. It is to provide music. But this simple understanding conceals the characteristic way in which music is produced by a device. After all, a group of friends who gather with the instruments to delight me on my birthday provide music too. A stereo set, however, secures music not just on a festive day but at any time, and not just competent flute and violin music but music produced by instruments of any kind or any number at whatever level of quality. To this apparent richness and variety of technologically produced music there corresponds an extreme concealment or abstractness in the mode of its production. Records as unlabelled physical items do not bespeak, except to the most practiced of eyes, what kind of music they contain. Loudspeakers have no visible affinity to the human voice, to the brass or the strings whose sound they reproduce. I have little understanding of how the music came to be recorded on the disk and by what means it is retrieved from it. I have a vague conception at best of the musicians who originally performed the music; I may not even know how many there were, and in some cases I will not be able to distinguish or identify their instruments from the reproduction of their playing. It is the division between the commodity, e.g., music, and the machinery, e.g., the mechanical and electronic apparatus of a stereo set, that is the distinctive feature of a technological device. An object that exhibits this central feature clearly is a paradigm of the technological device.

Albert Borgmann, 1984.[x]

When tools as such became machines, their relationship with man inverted itself. Prior to the Industrial Revolution, man was surrounded by tools; after the Industrial Revolution, it was the machine that was surrounded by men. This is the precise meaning of "revolution". Prior to the Industrial Revolution, man was the constant in the relationship, and tools were the variables; afterwards, machines were the constant, and men were the variables. Previously, the tools worked as a function of men; afterwards, men worked as a function of the machines.

Vilém Flusser, 1983.[xi]

Man at the mercy of the machine is a familiar story: when synthesizers found their way into popular music, legitimate concerns about musicians losing their livelihoods were often ac-companied by rather more abstract accusations that synthesizer music was not 'real': it was cold, without emotion, beauty or (to recall Smalley) meaning. Yet anxieties about synthesized music significantly predate synthpop. For example the Russian artist and composer Andrey Smirnov recalls a science-fiction essay written in 1917 by Evgany Sholpo entitled *The Enemy of Music*. Sholpo describes a machine called the Mechanical Orchestra that is capable of producing sound and music without the need for performers.[xii]

During my introduction to electronic music these objections and anxieties didn't bother me in the least, I hated 'real' music and everything it stood for. I took great pleasure in the fact that my little second hand drum machine (a Boss DR55) upset the heavy metal and punk communities at my local comprehensive school equally. In my experience the drum machine, perhaps more than the synthesizer, became the primary point of contention. I think this was mainly because it enabled the operator to press 'go' and it would do its thing, functioning as a kind of stand-alone system. Like Sholp's *Enemy of Music*, it was the automation that people were uncomfortable with. For me, automation was the thing I liked. Consequently the drum machine became my instrument of choice and I became obsessed with its development.

In 1980 two very significant drum machines were introduced, the Linn LM-1, and shortly after, the Roland TR808. It is interesting to note that on its release the 808 was rendered almost instantly obsolete due to the allegedly superior LM-1, which was considered better because it was more 'real'. There were two main reasons why the Linn could claim to be more real: (1) in its use of samples of 'real' sounds as opposed to the 808's synthetic models; and (2) in its use of 'real time' pattern entry (here the user taps the relevant button at the right time to record an event as the rhythmic loop is played), as opposed to 808's step entry method found on some earlier drum machines.[xiii] But it is clear that what constitutes real in this context is open to debate. If we stick with the idea that the drum machine is a copy of real drums, drumming and drummers, we notice that each of the two machines offer very different interpretations of what drums, drumming and drummers are. In contrast to the American designers of the LM-1, the Japanese designers of the 808 placed an emphasis on synthetic models of various sounds. These could be altered in a number of ways with tone, decay and (the snare's) snappy parameters. The manipulation of these parameters produces results that are quite different to the simple pitch shifting of the LM-1 (which merely changes the playback speed of the sample). Imagine for example the difference between a vocal sample being played over a keyboard as opposed to a note being sung over a scale. The first (the transposed sample)

becomes unrealistic once its pitch deviates by a certain amount; the second (the sung scale) sounds more 'real' to the listener over its entire range. The 808 therefore gives priority to a different aspect of what is 'real'… it offers a different interpretation of the real, specifically concerning the integrity of timbral relationships.

Similarly, pattern entry on the 808 takes the form of a row of 16 buttons that are enabled or disabled to make rhythmic structures (rather like the Scrabble tiles method). This is again very different to the LM-1 where pattern entry is derived from hitting drums at specific points within a loop. The LM-1's methodology implies that the player identifies (if only at an intuitive level) the position of a desired event before hitting it. The 808 is quite different: here a button can be pressed anywhere within the 16 divisions without necessarily having any predetermined expectation of what the resultant pattern might sound like. When I first used an 808 (I think around 1987) I was instantly struck by the absorbing nature of this method of pattern entry. It appealed to me because it generated results that were not entirely expected; it could be 'played', but in a way that was entirely different to playing 'real' drums. The interface used on the Japanese 808 offered a different way of engaging with rhythmic data that extended one's imagination, it added to the music and was not just a means of encoding it.

I think if we compare the two units, for me the LM-1 attempts to represent (copy) drums drumming and the drummer, whereas the 808 unapologetically attempts some form of abstraction of the kind hypothesized by Borgmann. What we should surmise is this: even if the drum machine *is* a copy of drums, drumming and drummers, it is not *only* a copy; even the copy (if it is a copy) offers something that the putative original does not.

C. AGAINST THE METAPHYSICS OF ERROR

The moments of music that mean most to us are those that are unplanned.

Rebecca Salvadori.[xiv]

It is fairly common for musicians to talk about the importance of mistakes and the unex-pected. These are often associated with technical errors, malfunctions and failure of one sort or another. Youngs, for example, states: "I love error and malfunction. If I'm totally in control, I can get bored. What's not to like in a piece of equipment doing something unexpected and amazing?" Obviously I agree with Youngs - the unexpected results of the 808 for example were the reason I enjoyed its interface so much. But I think the ways in which we describe those kinds of unexpected occurrences often place an undue emphasis on error, failure or malfunction. The general vibe in these kinds of conversations is that the mistake (although ultimately helpful) happens because something has gone wrong (as opposed to right), i.e. creative triumph from technical misfortune. Actually I think we have built up a mythology around the role of error and malfunction in music production. For me this mythology, although superficially radical, is fundamentally conservative because it is based upon an as-sumption that everything unplanned is a mistake, or, that everything beyond our control is an error. I think that belief is fundamentally grounded in the assumption that we are, ideally, controllers of our environment: man as creative genius.

In 2000 Kim Cascone published a paper in the Computer Music Journal that gained some attention with its assertion that 'failure' had become a focus of much contemporary digital music. In it he describes the production of Oval's album *Systemisch* (Mille Plateaux, 1994), drawing attention to the physical manipulation of a compact disc to produce playback errors. It is interesting, however, that the paper does not mention the painstaking act of composition described by Oval's Markus Popp in a later article (Sound On Sound, October 2002). Here, in contrast to the description implied in Cascone's text, the piece's production is portrayed as the result of many hours of manual editing in a standard audio editing environment - the result of specific aesthetic choices and what the composer describes as "hard work". In my opinion the continual reframing of *Systemisch* as "epic fail"—the result of automated and unpredictable processes, with little authorial intervention—does nothing more than pander to our collective anxieties about automation. And for me Cascone's naïve reappropriation of McLuhan's celebrated (and in my opinion flawed) mantra "the medium is the message" into "specific tools themselves have become the message" simply rearticulates the transparency-opacity narrative present in Smalley's text: it is technology in a worst-case scenario, technology as utterly opaque.

Artefacts, by definition, have an intended function. Anything that has an intended function is subject to malfunction. Thus, for technical artefacts, the concept of artefact, function, and malfunction are conceptually linked: None is intelligible without the other.

Lynne Rudder Baker, 2008.[xv]

According to Baker, a malfunction is an artefact's failure to perform its intended function; where its intended function is physically possible, when a competent operator tries to perform that function, and it is done under conditions for which it was designed. For example, a perpetual motion machine cannot malfunction because, as is generally accepted, perpetual motion is physically impossible. The perpetual motion machine fails, but that failure should not be classed as a malfunction. This logic kind of makes sense, but I think Baker's definition is not as neat as it first appears. In particular I have problems with what counts as operator competence and the belief that an artefact has a specific set of intended functions.

First of all, who decides what the intended function of a particular artefact is? Is it the de-signer? And if so, who could we cite as the designer of the hammer? Clearly the use of the hammer has evolved, and as such we have to accept that the hammer's intended function has also evolved. This suggests to me that machines don't have fixed intended functions at all. If I was using a hammer to prop a door open and the end fell off, or, if I was hitting a long metal object with the hammer and the end fell off, or, if I was swirling the hammer

around my head just for fun and the end fell off, I would feel equally confident to call any of these occurrences a malfunction of the hammer (irrespective of its use, my intended purpose or competence) simply because the end fell off and hammers should not do that. So for me the malfunctionality of the hammer should be considered with reference to those circumstances - i.e. the context. According to Baker I would be wrong to do so, but I still think it makes sense because I roughly know how a hammer should behave in different circumstances, and that it has malfunctioned if the end drops off.

Similarly, some artefacts have very ambiguous functions - for example what is the intended function of Lego? Is it to occupy your children while you cook lunch? Is it to foster hand/eye co-ordination or cognitive development? Is it to teach the basics of construction? Is it to en-able children to have fun? Or is it to enable one child to demonstrate his or her technical competence to another and thus gain some kind of social status? And if that is the case, how do we determine when Lego malfunctions: when children find it boring, when fun is not present, when hand/eye co-ordination does not develop, when a brick does not join to another brick? Probably the only way I would say that Lego could malfunction is in this last very crude sense: when a brick does not join properly to another brick. But that totally ignores the many reasons why people use Lego so much and its many context-dependant functions. What about a climbing frame, can that ever malfunction? If so, and if we follow Baker's definition, we would have to make reference to its intended function: let's say that is some kind of development of motor skills. But if the climbing frame actually facilitates the development of those skills, at what level do we draw the line that distinguishes between the competent and incompetent user of the climbing frame? If the function of the climbing frame is to foster competence in its use, built for incompetent users to acquire competence, how can we say the climbing frame can malfunction at all? I think I have seen many that did, especially the one in Clifton Park, Rotherham in the late 1970's.

For me this demonstrates that malfunctionality is a much more complex scenario than that described by Baker. Intentions, failures, errors and malfunctions are produced within specific practices and contexts, which somehow paraphrases Wittgenstein's assertion that "the meaning of a word is its use in the language."[xvi] For musicians, errors come in many shapes and sizes: the error that means you have to abandon the show; the error that leads to a life-threatening accident; the error like buying the wrong piece of equipment and having to go back to the shop to replace it; and, only some are the kind of errors that result in a new and unexpected piece of music.

D. WAS COPERNICUS WRONG?

When Copernicus claimed that the earth was not the centre of the solar system did the planets suddenly change direction and start move around the sky in a different way? Or, perhaps one day Copernicus observed a change in paths taken by the planets as they moved around the sky and realised that a new explanation was needed to account for these new movements? Neither of these scenarios is correct: prior to, during, and following the Copernican revolution nothing changed about the movement of the planets. All that happened was Copernicus gave us a different description of what was going on with the planets, replacing the *geocentric* model we were all familiar with, with a new and radical *heliocentric* one.

The pre-Copernican geocentric account of the solar system placed the viewer (and by extension the earth) at the centre of things - it offered a first person account of the movement of points of light around the sky. Generally speaking I think most of us still stick to this account - when I get up in the morning I see that the sun is over there (I don't usually get up in time to see it rise but I guess it has done), and during the day it moves through the sky to over there, and goes down behind that hill. I track its movement in relation to me, I look at things like the position of my washing line and garden shed to assess its direction, not other celestial objects.

Somehow these contradictory accounts (the heliocentric vs. the geocentric) don't seem con-tradictory at all when it comes to our daily lives. Despite the fact that we feel like we are at the centre of things, following the Copernican revolution, we understand this isn't the case when it comes to the movement of planets. Although I track the movement of the sun in relation to my mother's washing line (and not to other celestial bodies), I assume that some physical force is moving *me* (and the earth) around *it*, rather than *it* around *me*. We seem to have understood this multi-perspective outlook. But I think other areas of our worldview are not as resolved.

Flusser's assertion (quoted earlier in this text), that man orbits technology (as opposed to technology orbiting man), could be seen to mirror the Copernican shift from geocentric to heliocentric and thus claim some revolutionary status, but it does not. Why? Because Flusser, unlike Copernicus, gives his new description (of the relationship between man and technology) based on his belief that something has changed (i.e. the relative positions of man and technology). Copernicus does the opposite: he claims that nothing has changed… he just offers a revised account of the relationships between the earth, the sun and the planets. In terms of hypothetical relationships between man and technology I think Bruno Latour[xvii] does what Copernicus did - he offers a revised description of those relationships, one that is not dictated by any necessary change in those relationships… He just offers a different account that does not place man at the centre.

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i: Smalley, D., (1997) Spectromorphology: explaining sound-shapes. Organised Sound 2(2): 107-26, Cambridge University Press.
ii: Denis Smalley (born 1946, New Zealand) is a composer of electroacoustic music. Both Fowler and myself are keen to point out that his seminal composition "The Pulses of Time", recorded at the Electroacoustic Music Studio of the University of East Anglia UK in 1978, is an extraordinary work of British academic electro-acoustic music.
iii: This example was inspired by British artist Rian Treanor.
iv: Rainer, Yvonne (2006). Feelings Are Facts: A Life. MIT Press
v: Terre Thaemlitz points out that Gidal and Rainer's "transparency" should be seen in opposition to Smalley's transparency as invisibility, as in removing the veil to see behind, turning the wall to glass. For example, in response to a government scandal people call for more "transparency".
vi: Varèse, E. (1917) Francis Picabia (ed.). 391.(5) writes "I dream of instruments obedient to my thought".
vii: A tendency that is also clearly present in the work of Viennese filmmaker Peter Kubelka whose process attempts to foreground the "hardcore" of the medium as opposed to functioning as a carrier of meaning.
viii: See Kirsh, D., (1995) The Intelligent Use of Space. Artificial Intelligence 73:31-68.
ix: Rorty, R., (1989) Contingency, Irony and Solidarity, Cambridge: Cambridge University Press.
x: Borgmann, A., (1984) Technology and the Character of Contemporary Life: A Philosophical Inquiry.
xi: Flusser ,V., (1983) Towards A Philosophy of Photography.
xii: Smirnov, A., (2013) The book "SOUND in Z. Forgotten experiments in sound art and electronic music in early 20th century Russia". Sound & Music, London / Verlag de Buchhandlung Walther Konig, Cologne.
xiii: Another important distinction between the two units is the specific sonic character of the kick drum: on the LM-1 this is a rather sharp, clicky sound, whereas the 808 is a much deeper, denser, longer tone. The early success of the LM-1 helped to establish the dominance of this sharper sonic form. This was confirmed when The Human League's Don't You Want Me (Virgin Records 1981) produced by Martin Rushent in 1981 at his Genetic Studios reached number one is the UK singles chart, and holding the Christmas number one spot that year. It is reported by Sulley (a singer on the record and member of the Human League) that the drums on Don't You Want Me were entirely rerecorded when the LM-1 arrived in Rushent's studio. The LM-1 fitted a popular belief about what an ideal kick ought to sound like (i.e., short and sharp) and its hegemonic status was sustained for most of the 1980's with widespread use within ostensibly non-electronic musics. It is also worth nothing that although the 808 tends to be written into the history of house and techno, we should not forget that the 'sharper' Linn kick was prevalent on a number of early house and techno recordings.
xiv: a comment made after the termination of a concert following technical problems and Institute of Contemporary Arts, London, 2014.
xv: Baker, L. R., (2008) Metaphysics of Malfunction, in Techne: Research in Philosophy and Technology Vol 13
xvi: Philosophical Investigations
xvii: in for example the essay "Networks of Humans and Non Humans" in Pandora's Hope: Essays on the Reality of Science Studies, Harvard University Press, 1999.

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