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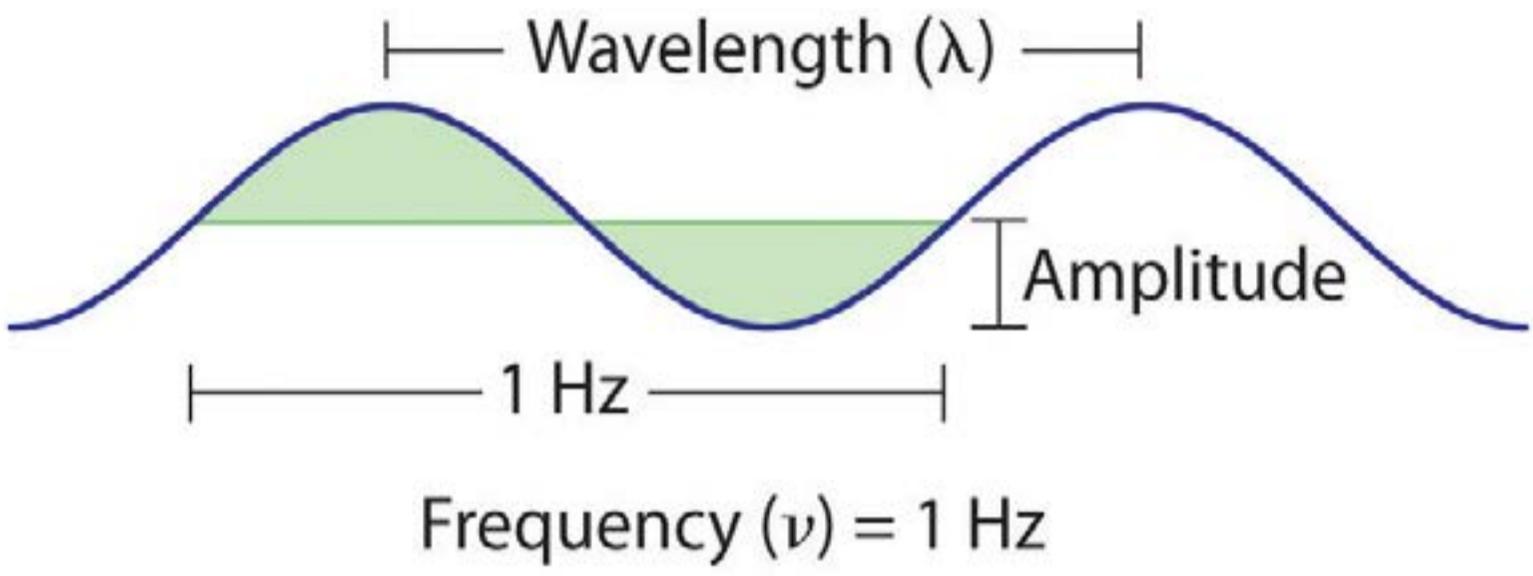
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2017

RESONANT STRUCTURES FOUND BY WAY OF EXPLORING INFINITY

"If you wish to understand the Universe, think in terms of energy, frequency, and vibration"

Nikola Tesla





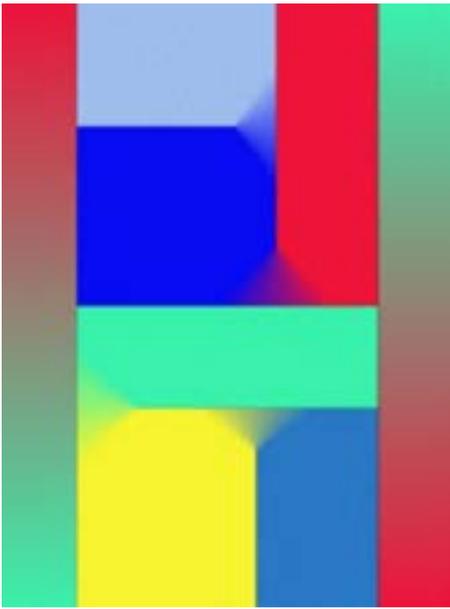
The Ninth Wave by Ivan Aivazovsky.
Oil on Canvas
1850

Resonance is defined by the Merriam-Webster dictionary as

- 1.) "the state of adjustment that produces resonance in a mechanical or electrical system."
- 2.) "a quality of richness or variety, a quality of evoking response."
- 3.) "a synchronous gravitational relationship of two celestial bodies (such as moons) that orbit a third (such as a planet) which can be expressed as a simple ratio of their orbital periods."

In material objects a sound or vibration produced in one object that is caused by the sound or vibration produced in another is due to the resonant frequency of those objects. Resonance is a quality emergent of material and bound to the structural makeup of that material, yet, it is also a word that has entered into our common lexicon to symbolise the effect of an idea and or its spread among a population. Resonance is a sustain of energy transference. Hartmut Rosa would say that resonance can also be seen as a form of equilibrium or balance. Johannes Kepler believed that "there exists a very common geometry in the universe. From universe to smallest particle of matter, everything is under violent effect of this common geometry."¹ If resonance is a quality that links material across distance by means of vibration or material structural likeness then it could very well be a symbol of this 'common geometry'. My interest in resonance, as an artist, stems from an ideal that all material contains within it an inherent energy.

All material has an inherent potential. How, as an artist, do I utilise the material employed in my work to produce the greatest form of potential or resonance. A resonance that

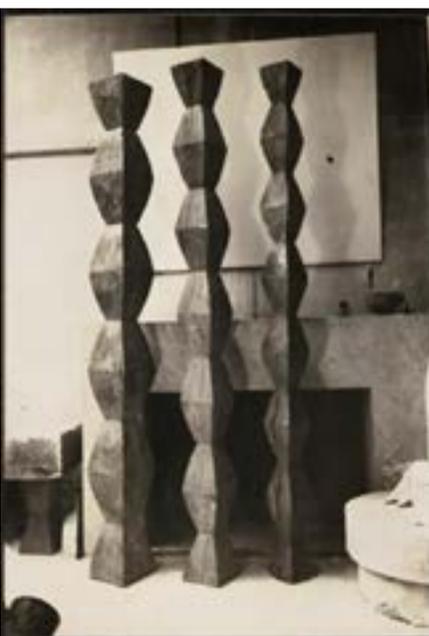


Still Image from generative audio visual app. released with Reflection by Brian Eno. 2017

can communicate intention or fundamentally symbolise the temporality of our collective perception. My personal intention as an artist is to explore material systems for the re-generation of a visual experience/intention and to portray a visual aesthetic that draws the viewer to a place of pause or 'resonance'. A seascape in oil by Crimean painter Ivan Aivazovsky titled "The Ninth Wave" is an image which represents that nature, and the universe for that matter, has absolute control over our existence. It is a painting portraying survival, hope and the human battle with nature, against the sea, against physical material. I bring to mind this traditional oil painting to illustrate a point that Art has, since before its categorisation and identification, exemplified the human intent to communicate visual depictions of the conceptual world we exist in. The painting resonates through time from its inception in 1850 and does so due to a careful mastery of the material it is made of. The work takes its form as much from the language, vocabulary and traditions of its time as from its colour palate and pigments, thus, when we look at it today, it is recognisable. Yet today, our plight isn't so much against nature or the waves, but with sustainability and equality. As The Ninth Wave is about nature and hope it can also be considered to depict and utilise the very idea of resonance. The title refers to a nautical occurrence when waves grow in succession to the largest wave then repeats. This can also be likened to a pulse or rhythm, as this pulse is the result of the moon rotating around this earth, the waves are an expression of resonance brought forth by this occurrence. An insightful viewer can easily deduce this due to the realistic depiction of an imagined reality the painting portreys along with a concentrated consideration of all the natural elements involved. In my work I have developed thus far, a central tenet is the viewers experience, the state which I intend for the viewer, and this state is anchored to resonance in both structure and form. Is the work achieving what I have set out for it? Are there other more efficient ways to develop the intended experience.

I have organised a short research in critical theory concerning a new articulation on resonance which is a reaction to accelerationism, cybernetics and maybe even capitalism. I will connect some ideas on resonance to the concept of infinity and set forth a system to develop structures that I believe symbolise these concepts. I will connect this research to current artists and thinkers works which I feel share similarities to my own intentions as well as spend some time in exposing the details of the various systems I am currently developing for the generation of new work. A more immediate question I am trying to answer in my own work is that of a mechanical systems ability, like XY plotting machines, 3d scanners and printers, to aid in the creative process I set forth in my studio work. Can these machines I am developing deliver the anticipated accuracy of line and image that I search for in my work as well as be semi autonomous and theoretically operate forever. Can I use a tuning fork to generate a painting? Will this transference of energy be clear and efficient enough to help develop a contemporary version of The Ninth Wave?

Félix Guattari maintained that Art is a practice bound to the finite, but one that opens towards the infinite². Constantin Brancusi developed the Endless column in the early 20th century. Jem Finer began the 1000 year non-repeating composition Longplayer on January 1st of 2000. Brian Eno has gone one further, possibly in homage to Longplayer, and just released Reflection. Reflection is an album and interactive music application made public on January 1st, 2017, which can theoretically play non-repeating forever. Jem Finer speaks of trying to conceptualise the idea of a millennium as the project started in the mid 90's when Y2k and doomsday fears were seeping through the society. Brian Eno speaks of being constrained to a finitude of physical formats and wanted to make music that would "unfold differently all the time - 'like sitting by a river': it's always the same river, but it's always changing"³. How Eno describes his intentions with Reflection is what Guattari is speaking of with his statement. The artist has the ability to connect a material work of art to a concept which is impossible to experience yet the very association of the two forms, material and conceptual, marry into an ideal by virtue of its own poetics. The work of music, album, and application is bound to the finite but actively points our perception to that of the infinite via its inherent concept. Brancusi had a similar intention with his work titled Endless Column. He is most known for his Birds in Flight sculptures which he produced prodigiously. These works were in some way a response to the age old ideal in sculpture to capture movement, to capture motion. He continued in that vein to capture flight and worked to capture conceptual distance while helping to establish a tradition of abstract sculpture. His seminal work, Endless Column, which is simply a geometric form stacked on itself ad infinitum, or so he wished to imply with the work, guided the viewer to gaze into the form which would lead their gaze vertically into a confrontation with the concept itself. The stacked form is said to be inspired by a trip to New York in the



Sketch Models for Endless Column. Constantin Brâncuși's Paris studio, 1920.

² Sauvagnargues, Anne. Artmachines - Deleuze, Guattari, Simondon. Edinburgh University Press, 2016.
³ Hampton, Chris. "Brian Eno's New Album Goes on Forever...literally." Chart Attack, 2016.
<http://www.chartattack.com/news/2016/12/20/the-new-brian-eno-album-goes-on-forever-literally/>.



3000 A.D. Diffusion Piece.
1972
Terry Fugate-Wilcox

mid 20's but it also pays homage to his Romanian roots as the motif can be seen in the architecture of carved wooden country homes and farm houses of the region. In line with Klee and Kandinsky's thinking that there is a form of concrete art where form and intent is congruous or in synthesis, Brancusi believed that 'the artist should know how to dig out the being that is within matter and be the tool that brings out its cosmic essence into an actual visible existence'.⁴

This dalliance with 'cosmic essence' may be a flag to the more pragmatic or poetically incapable as occultist leaning but I would take the stance that he is simply bringing into mind the idea of cosmic infinity and even of underlying order in matter itself. Brancusi may have helped bring abstract sculpture into the greater public sphere but he also, along with colleagues like Marcel Duchamp, Man Ray and Pablo Picasso, helped establish the platform which brought forth conceptual art as it is known today in all its variations.

One outcome to take root just over a decade after Brancusi's passing is a movement called Actual Art. It is a movement that calls for art to embrace nature and be formed in part by nature or natural processes. A notable Actual Art work is Terry Fugate-Wilcox's 3000 A.D. Diffusion Piece permanently installed in J. Hood Wright Park in New York in 1972. This work is a monolith of tall rectangular chemically sensitive plates of metal bolted together. The metals are pure Aluminium and pure Magnesium and it is believed that by the end of this millennium, around the time Longplayer ends, the slabs of metals will have naturally bonded seamlessly together to become one metal. This work, like Jem Finer's longplayer, will have completed by the beginning of the year 3000 and is speaking of the concept of time, or rather, how to visualise, symbolise and/or grasp an understanding of time. As Eno is speaking about how to emancipate himself and creation from the finite structures of our condition, Terry Fugate-Wilcox is actualising a direct connection with time and the very finitude it seems to defy. As we as humans can think of our life times as contained in 100 year periods, 1000 years asks us to think that much further, to exercise the conceptual muscles associated with not only our lives but our worlds, our futures. How is it possible to understand time other than that it is in constant flux and change, while at the same moment fast for us yet slow to the rocks we stand on. Now with this I want to revisit the quote by Kepler that is at the beginning of this paper. "Everything is under violent effect of this common geometry." Kepler is best known for his Laws of planetary motion which, in the early 1600's, were an improvement on the established laws put forth by Copernicus 100 years earlier. The motion of the planets and associated maths, which has grown into amazingly accurate prediction models of celestial movement, could be construed to symbolise this ideal of resonance brought up earlier. As Action Art and the Endless Column confront us with the abstract concepts of time and space, they also resonate with nature and time itself either through its changing matter or the visualised concept. These artists engage with the artistic process in a broader context than that of an architectural draftsman plotting out of a building's foundation in perspective. These artists and thinkers mentioned thus far may provide a context in thinking about the artistic process and show how the careful manipulation of material in accordance with intent and concept can emancipate an artist from art maker to concept explorer. To speak about artistic process with a more contemporary perspective, take an excerpt from the recent essay written by Reza Negarestani titled Torture Concrete: Jean-Luc Moulène and the Protocol of Abstraction for the exhibition of Moulène in late 2014 at the Miguel Abreu Gallery in New York.



Cover: Torture Concrete: Jean-Luc Moulène and the Protocol of Abstraction: Reza Negarestani

"What Moulène calls 'protocol' when describing his modus operandi in making art is a performative system or germ of procedurality. It is a thought-manual furnished with materially influenced behaviours and evolving logics of operation. It is called protocol insofar as it governs the artist's conduct according to entanglements between (normative) laws of thought, (representational) laws of imagination and (dynamic-natural) material laws. To follow protocol is to be prepared to change one's approach in accordance with how interactions of matter and thought develop and how the space of abstraction is reorganised and diversified. In other words, the protocol offers new choices of disequilibrium for the entanglement between thought, imagination and material."⁵

Striking a chord with me and my intention with this thesis paper is the idea of artistic process as a set protocol which embraces change and the generation of new vertices between thought, imagination and material. This idea relates to my own work very much as it does to Brancusi's intention of uncovering a material's 'cosmic essence' as well as to the algorithms coded into Longplayer or Reflection and even 3000 ad Diffusion Piece. These conceptual / artistic 'Protocols', which are so completely different to an artistic practice like that of traditionalist Aivazovsky, have opened up untried avenues for the generation

of new symbols with which we, as participants in the works, can exercise our conceptual reach. We are in a way being led into new awareness models through relating to the very works and their intents. I find these awareness models different to those of a realistic painting where the real world is represented as a facsimile before us. The narrative of conceptual art is all too often lost if one does not know of the context or artistic process imbued where as with *The Ninth Wave*, a reverse modality is in effect. The viewer is confronted with an understandable / relatable image and must explore that space, or artists socio-political leanings, in order to infer or uncover added 'poetic' meaning. Ray Brassier brings an interesting trajectory to this modality of conceptual art and aesthetics and says,

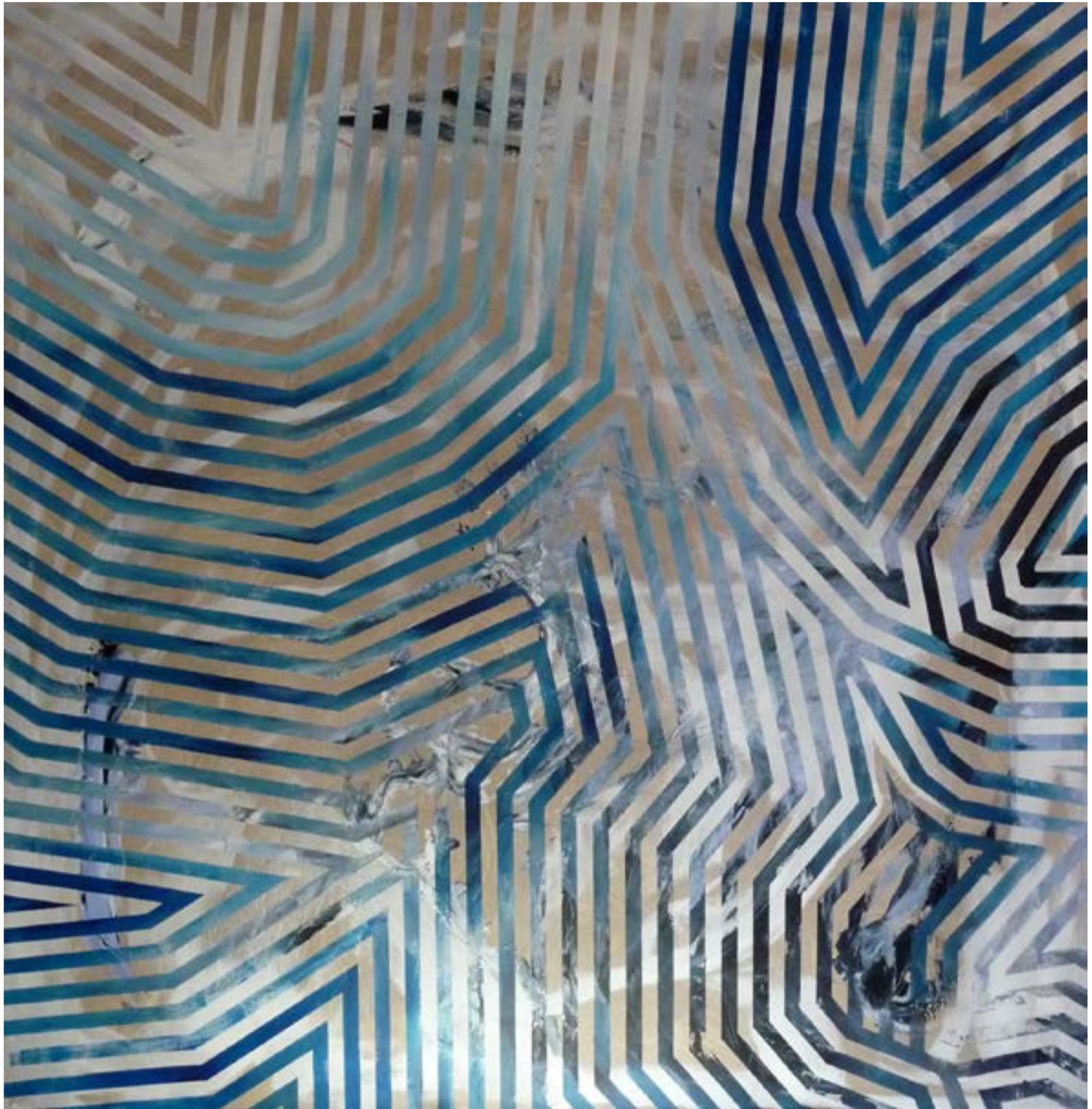
"Perhaps it's not so much a question of pitting the conceptual against the aesthetic, or concepts against affects, but of developing a conception of aesthetics which is not exclusively governed by either: one dedicated to reconstructing sensation on the basis of new modes of conceptualisation. A Promethean constructivism will engineer new domains of experience, and it is these new domains that will need to be mapped by a reconfigured aesthetics."⁶

So the differences within art and its concepts across genres and time are not so much shifts in aesthetics per se but an evolution of the domains of experience we exist in. These domains are shifting and dynamic and integrally tied to the ideals, aspirations and undertakings of the greater society we live in. The Artist as survivor in their own bubble is just a miserable attempt of the ego to claim its uniqueness and vanity. Here is where I will get back to the notion of resonance and what I maintain to be a model for this 'reconfigured aesthetics' that Brassier is speaking of.

6 Brassier, Ray. "Prometheanism and Real Abstraction." In *Speculative Aesthetics*, p. 77. Urbanomic, 2014. <https://www.urbanomic.com/book/speculative-aesthetics/>.

The bandwidth of human audibility is a fold on the vibratory continuum of matter.

—Steve Goodman 'Sonic Warfare: Sound, Affect and the Ecology of Fear, Cambridge, MIT, 2010, p. 9



Neu #1. 2016
Oil & Akryl on Canvas
180 cm x 180 cm



Tetra Helix #1
Cast Bronze
6 x 7 x 25 cm

Hartmut Rosa is a German philosopher and social theorist who is currently the dean of the Max Weber Centre for Advanced Cultural and Social Studies located at the University of Erfurt in Germany. He has come up with some very insightful explanations and articulations of the state and evolution of our modern society pertaining to the theory of Accelerationism. Accelerationism has roots in a theory set forth by Deleuze & Guatarri called Deterritorialisation, which considered the dynamics of societal conditions developing due to the growing force of a cultural Globalisation. Deterritorialisation is considered the breaking of boundaries between culture and place largely due to the greater immediacy of physical interconnection in society. Accelerationism is a concept which is basically stating that society and the world is accelerating, becoming more interconnected at a faster rate, giving humans a different conception of time and greatly affecting the modern human condition. Accelerationism has a bit of a doomsday taste to it. What happens when we reach the singularity of accelerationism, what happens when everything starts spinning too fast for life to hold on. Is this a byproduct of technology and globalisation, a cybernetic fever dream, or more a conceptual response to a world that has opened up to embrace an ubiquitous interconnectivity of the human species. Interconnectivity may be a cause as well as a solution. The world and the human race in association with societal power structures and governments may be just experiencing a form of a training period similar to that of the taming and breaking of a wild horse. Rosa brings to the table a new idealisation and possible solution in the form of his theory of Resonance. Rosa has been called a guru of Deceleration and a proponent of the idea that Accelerationism leads to Alienation. He searched to find an antidote, so to say, for this outcome of Alienation and came to the idea of Resonance. He explains it by saying that “you’re non-alienated from your work, for example, or from the people you interact with, when you manage to have a responsive, transformative, non-instrumental relationship to them, a resonant relationship.” On a social level this can be very true and Rosa argues that if you scale this modality up to a societal-cultural, governmental-global scale then Acceleration can continue but as long as it is in balance with or enabling Resonance. As Rosa infers “The difference is you don’t try to manipulate the other side, which could be a person or an idea or a piece of music or nature, or to control it instrumentally or make it disposable and available. Instead, you try to listen and to answer.”⁷ This direction of intellectualising, or rather, hyperbolising on the relationship between the individual and the greater world may be seen as a modern, atheistic form of neo-stoicism and for my purposes as an artist, uncovers a great deal of potential in the act of conceptualising new work. It is important to note the inherent elusiveness and uncontrollability of resonance as Rosa says “there is always an uncontrolled moment in art, in terms of production as well as of reception. You cannot say tomorrow I’m going to be creative at 2 pm. It always has to come along with the sweeping moment that I call resonance. The uncontrollable is part of this moment.” I maintain that this lack of control is inherent to the human condition and represents a sort of dynamic feedback loop, a will toward conversing with protocol. There is reciprocation with and inclusion into a greater conversation with process. Katherine Hayles wrote in *How We Became Posthuman* on similar issues which arose from the conditions of globalisation and accelerationism and writes that “The conceptual shifts that took place during the development of cybernetics display a seriated pattern reminiscent of material changes in artefacts. Conceptual fields evolve similarly to material culture, in part because concept and artefact engage each other in continuous feedback loops.”⁸ This continuous feedback loop can possibly offer a solution to Rosa’s problem with the ephemerality and uncontrollability of resonance. Can a creative or artistic process enact a ‘feedback loop’ that sustains a high level of resonance within and exuding from the resulting artistic ‘artefact’ or creation.

7 Dirk Dobiéy. Interview with Sociologist Hartmut Rosa - Age of Artists." AgeofArtists.org, 2016. <http://www.ageofartists.org/10743-2/>.

8 N. Katherine Hayles. *How We Became Posthuman*. The University of Chicago Press, 1999. https://monoskop.org/images/5/50/Hayles_N_Katherine_How_We_Became_Posthuman_Virtual_Bodies_in_Cybernetics_Literature_and_Informatics.pdf.



Asymmetric Tetra Helix
Cast Bronze, steel, wood.
18 x 18 x 180 cm

In my current works under construction for the final preview exhibition and KABK graduation show I am employing three separate processes to make three forms of work. A painting work (2d), A 5 meter cast aluminium tetra-helix form (3d), and a semi-automated performative sound installation utilising tuning forks and customised modular electronics (4d). I have started with an in depth consideration and exploration of the platonic form known as a Tetrahedron. I have been interested in this form for some years now as I have come to know it as not only a platonic form but a primordial symbol. I see the tetrahedron as describing a fundamental ideal concerning emergence and even matter itself. A tetrahedron is the first possible form that material existence can manifest as, as 3 points can mark the perimeter of a triangle in space, the 4th point, which may not lay on the same plane as that of the triangle, describes the volume of the 4 points in space. This 4th point takes the infinitely flat plane of three points and 2 dimensions into the 3rd dimension and, by way of its topology, temporality is achieved. If considering these points in a conceptualised space of abstract laws on a pre space-time and universal plane then the associations I am inferring can be understood poetically to describe a conceptualised creation myth. From 2 points a relationship, from 3 points a system, from 4 points a volume in time. A tetrahedron stacked unto itself in succession like that of Brancusi's Endless Column manifests in a particularly interesting way. It can be mathematically proven that the tetra-helix possesses an interesting quality of infinity. Not one tetrahedron in a tetra-helix made up of identical tetrahedrons will ever align. Meaning a tetra-helix can never be closed in any linear based construction. The orientation of each Tetrahedron never repeats. This particularly elegant characteristic of the tetra-helix represents the concept of emergence itself, and coupled with its infinite reach, or process, in time, symbolizes what I believe to be the primordial fundamentality of existence. Entangled in these thoughts on the tetrahedron is a personal creative process that aims to craft a material version of this symbolic ideal. Aluminium is the material I chose as it is among the most abundant materials in the earths crust, the floor on which we base our civilisation. I have 3d printed 60 tetrahedrons of height 21 cm. 21 cm because of its relationship with the idea that the human soul weighs 21 grams due to the theory of Dr. Duncan MacDougal. This tetra-helical form will be presented hanging from the Gallery ceiling perfectly vertical and hovering just slightly above a low pedestal.

The next part of the final work is a 3.6 x 3.6 meter painting on canvas in acrylic, oil, and pen. These works are made utilising a 2.2 x 2.2 meter X Y plotter custom designed to work vertically on the wall with a workable area of 180 cm by 180 cm. The plotter is used to accurately draw a 2 point perspective horizon line grid on the lower third of the canvas thus representing a certain type of visual volumetric attribution of space. This is a key directive in the painting method I have developed over the last few exhibitions of what I call 'Pattern Paintings'. These paintings are a layering of linear masks which are ranging in opacity. I employ this method continuously to cause/develop a type of volumetric space to emerge on the flat 2d surface. I find an interesting characteristic of these paintings to be that when you realise there is this architecturally defined and mapped out substrata to the painting, that it seems to open up, and the horizon line begins to represent the deepest or furthest we can see into the work or intention, even though it is literally in between the painting and the viewer as it is the last layer applied to the work. A variation of this work is a system I am developing where the XY plotter is mediating the application of a waveform onto the canvas generated from a tuning fork activated by an electromagnet. The XY plotter is run off a raspberry pi so the idea is that as the pi is controlling the mechanics of the plotter it is also simultaneously translating the tone of an attached fork into the xy coordinates of its waveform. The tone of the fork can be made to maintain itself via a pulse width modulated electromagnet continuously alternating from on to off at a millisecond rate. In my studio experiments I have found that with the magnet I have, with an on/off rate of 20 - 30 milliseconds and the magnet 3 millimetres from the fork arm, the loudest, most consistent and resonant tone is produced. This tone is then read by the raspberry pi and translated to a line on the canvas. As the plotted line finishes in one horizontal path the pi will tell the plotter to return to the original point of origin and start again. What I hope to see over time is that the layered lines will create a type of landscape and/or pattern that would symbolise a certain temporality of sound. The overall work would be a kinetic, machine aided, semi permanent audio-visual installation governed by the custom designed XY plotters' size of 2.2 x 2.2 meters.

The third piece of the triad is a live performance of custom made tuning forks with customised modular synth electronics designed to activate the forks with solenoids and electro magnets while picking up the audio signal for manipulation by various filters and mixing through a 4 channel audio setup. A main intention with the performance is to experiment with the spatiality of the tones generated by the forks as well as the various rela-



Detail : 4 meter Tetra Helix
Cast Aluminum
4 x .25 x .25 m

tionships between the individual forks. Some forks with their tones activated at the same moment or in succession develop an audible oscillation which can be panned around a 4 channel system to great effect. Hearing this oscillation and the tones from the forks is a very literal exploration of resonance which brings me to the second main intention with this performative work. In context with the 2d and 3d representations of resonance via the other works, this 3rd aspect of the 4d experience of tonality primes the viewer to gain a deeper understanding of the larger group of work. By way of experiencing the direct result of the activation of the separate forks and in the context of viewing the larger group of work I intend to symbolise visually and make audible a quality of resonance in not only sound but in space, structure and material. As the Paintings depict sound by way of individual titles, subject matter and even producing mechanism they address, they could be considered the actual material representations or results of the vibration and resonance achieved in the performance. The performative aspect of this part of the final work is a step in the direction of developing a system which I can use to 'play' the paintings and sculptures in an interactive way. The next progression and iteration of these works is to develop this plotting system and electronics to allow me a direct way to use the plotter to mediate the application of lines resulting from a tuning fork composition. This would be able to be done both remotely and in the presence of the plotting machine. This designed methodology would allow me a more immediate connection to a synthesised process for developing new works that may capture some visual form of the ephemerality attached to resonance. This methodology would reach across the isles of the visual and audio senses of perception to create a form of synesthesia painting. By taking sound and manually translating it into a visual via a customised mechanical system is a current goal and as this goal is met I will continue to reverse this question by retranslating the visual back into sound. This methodology is based on an intent in my work and what I have written about in a recent text titled *A Certain State of Absence*, this intent is to attempt to shorten what I have called '*the Reflexive Divide*', the relation to and interpretation of a work of art by the viewer.

In this collection of works I have described and in the process of developing I look for certain forms of resonance, balance and structure that represent to me forms of emergence that develop from defined processes. The processes I enact to produce these works differ from each other yet arrive at, what I hope to be, the same conclusion. Poetically, I wish for the works to imply their own timelessness while circumnavigating their own finite end. As I try to develop my work intuitively with an aim for better understanding Tesla's universe, these works take me through considerations on and processes of frequency, vibration, balance and energy. Working in a multiple formats is a characteristic I embrace and nurture as I find this the most thorough form of artistic exploration. The will to work in one format has never interested me as it is in the various experiments developed in studio with various processes that allows me the broadest context for 'entanglement' as one might say. The interrelationships of painting, sculpture and sound, of visual work opposed to audio work, allows for an overall birds-eye view of the total work in progress. The viewer has more ability to arrive at conclusions concerning the underlying geometry of associations developed in the work. The three formats or modalities of work are the three inter related points of departure that when taken in context with either my own point of perspective or that of the viewers develop the volume and structure inherent to the platonic and primordial form known as the tetrahedron. The first possible form of emergence.



Mirrored Tetra Helix #1.
45 x 30 x 12 cm - Bronze.

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