Musika: The becoming of an artistic musical metaphysics

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CHAPTER 3

Musika, Musical Symbiont, Musinculus

> I confess that I am no longer thinking in musical terms (…) even though I believe with all my heart that Music remains for all time the finest means of expression we have. It's just that I find the actual pieces (…) so totally poverty-stricken, manifesting an inability to see beyond the work-table. They smell of the lamp, not of the sun. And then, overshadowing everything, there's the desire to amaze one's colleagues with arresting harmonies, quite unnecessary for the most part. (…) There's no need either for music to make people *think!* … It would be enough if music could make people *listen*, despite themselves and despite their petty mundane troubles, and never mind if they're incapable of expressing anything resembling an opinion. It would be enough if they could no longer recognize their own grey, dull faces, if they felt that for a moment they had been dreaming of an imaginary country, that's to say, one that can't be found on the map.
>
> Claude Debussy 1901

The idea of this project that has evolved to become my PhD dissertation acquired a sense of urgency in late 2013, when I became acquainted with Thomas Campbell's model of reality, the inspiration for this chapter. In it, I recognized a plausible explanation for the perceived resemblance between what is going on in my mind as a subjective experience and what I feel streaming from a piece of music, its subjective experience, an explanation for the abstruse likeness between music and self, the musical and the human experience of reality. While at first it seemed that my dissertation's thesis integrating music, consciousness, and reality, is too broad and fuzzy, through writing it soon became evident that what I try to tackle is in fact one single question, but its articulation has selected a *mise en abyme* form with nesting dolls effect – music is wrapped in consciousness is wrapped in reality. Or, music is wrapped in reality is wrapped in consciousness. Or perhaps, consciousness is wrapped in reality is wrapped in music?

From the previous chapters it has hopefully become clear that there are three hard questions my thesis is attempting to fit together – the hard question of physics, "What is reality?", the hard question of consciousness, "How the subjective experience arises from matter?", and the hard question of musicology, "How musical meaning as significance arises from sounds

organized in space and time?". What this chapter offers is a hypothetical construct: drawing on theories and models in physics, it submits a view on the musical as fractal, integral to reality. Here, I present my hypothesis on how music and consciousness are connected.

The reality beyond reality

In the subchapter "Physics of reality" of Chapter 1, I outline some of the new problems our understanding of reality encounters through the field of physics in the first half of the previous century, i.e. the relativity theory, the duality paradox, the quantum theory, the quantum entanglement. There, I also introduce a couple of prominent responses to these problems, namely, the Copenhagen interpretation and the Pilot wave (hidden variable) theory. To put Campbell's theory in its proper context, I shall now briefly review a few major spurts in modern physics.

Space can curve, and time is relative: Einstein blasted open the 20th century with the unsettling proposal that space and time are not independent realities with a reliable independent existence but are instead features of a unified field. Nothing exists outside of it – spacetime, physical objects and matter in general, along with reality as a whole are all parts of the same substance, submits Einstein in the 1920s: "Physical objects are not in space but these objects are spatially extended. In this way the concept of 'empty space' loses its meaning" (Einstein 2014). Understanding of time, also, endures a profound evolution, which could be summed up as follows: while reality appears to be continuous, "the distinction between past, present and future is just a stubbornly persistent illusion" (Einstein, in Hawking 2009). The sense of deeper reality operating beyond the observable one finds a wide resonance in public domains and demands a revision, if not reinvention, of modern narratives. This proves to be problematic. Since quantum mechanics is institutionalized as a paradigm that presents a new view of reality in 1920s, scientists debate on how and even whether to interpret its findings (e.g. the Copenhagen interpretation). The double-slit experiment and the quantum entanglement of particles are two particular areas of heated discussions. What does this mean and what can we say about it? Is consciousness (the subjective view of the observer) an actor in constructing or creating reality? What is consciousness, in terms of energy, mass, information? Interpretations differ. In theoretical physics the divide passes between those accepting consciousness as an operator of reality (Capra 1975, Wigner 1985, Bohm 1986) and those who don't (Heisenberg 1958, Peres 1993). Another line of division is between physicists who believe there is no 'objective reality' (Bohr, Heisenberg), and those who refute such a counterintuitive idea (Einstein). The hot point of

contention is on whether reality, as objects, events and processes, has an independent objective existence or whether it is a construction, a creation of 'observer's' or 'measurer's' or 'interpreter's' observation.

In Bohm's interpretation the answer is, "both-and." The ground of all life and matter is the *holomovement*, Bohm proposes: an undivided wholeness in a universal flux. There are two conceivable structures that define the holomovement, the Implicate and the Explicate Order. Where the Explicate Order organizes the causal material world of subjects and objects as we perceive it, the idea of the Enfolded or Implicate Order requires convincing metaphors. Bohm proposes three. The first one is the hologram, which showcases the idea that *what is* from our perspective, here and now, is not here, and is not now: it is a hologram, a nonlocal 'projection', every piece of which contains the whole image . Another powerful metaphor for the Implicate Order Bohm discusses is music; a third – consciousness. The notion of consciousness constantly emerges and persistently searches its proper place among scientific ideas and theories all throughout the past century. From the position of a misfit on the table of theoretical physics, throughout the century consciousness acquires the right of a full chair (see *Timeline* below, fig. 14). In Bohm's model, "Consciousness is much more of the Implicate Order than is matter . . . Yet at a deeper level [matter and consciousness] are actually inseparable and interwoven, just as in the computer game the player and the screen are united by participation" (Bohm 1987, in Riggio 2007: 66). The spirit of this statement of Bohm's is at the basis of Thomas Campbell's view of reality.

Born in 1944, Campbell is a nuclear physicist belonging to the vein in science that is interested in problem-solving approaches outside the Copenhagen interpretation, whose ultimate motto is felt by many to be, "Shut up and calculate" (misattributed to Richard Feinman). In 2003 Campbell publishes his trilogy, *My Big TOE*, where TOE stands for Theory of Everything. The book presents Campbell's model of existence and reality. In its capacity to articulate and systematize complex data and ideas, Campbell's *TOE* has provided guidance and has inspired the conception of my musical ontology. Campbell's merit is not in 'discovering' or in 'proving' but rather in organizing, connecting, illuminating. Campbell's hypothesis is, in fact, not particularly novel, in the sense that it is based on hypotheses and research proposed and conducted previously, by others. Campbell's thought emerges from within the field of digital physics, to present a version of the Simulation hypothesis, but more generally, it offers an interpretation of an almost century-long research, debate, and discussion in the domains of theoretical physics, especially regarding questions of

consciousness. As we shall see in the next subchapter, Campbell takes a clear stance on these questions.

Figure 14// In My Big TOE Thomas Campbell develops a model of reality based on a few fundamental propositions regarding the nature of consciousness, information and reality. These ideas have been accumulating and propagating throughout the past century: from intuitions dwelling in the realm of possibilities, they have become necessary considerations and a feature of ongoing discourse in theoretical physics. Below is a timeline showcasing the emergence of these ideas.

1905 Albert Einstein: $E = mc^2$. The equation suggests that energy is converted matter.

1930 Eugene Wigner: "It follows that the quantum description of objects is influenced by ` impressions entering my consciousness" (Wigner 2014: 173).

1931 Max Plank: "I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness" (Planck 1931).

1931 Erwin Schrodinger: "Although I think that life may be the result of an accident, I do not think that of consciousness. Consciousness cannot be accounted for in physical terms. For consciousness is absolutely fundamental. It cannot be accounted for in terms of anything else" (Schrodinger 1931).

1935 Pascual Jordan: "Observations not only disturb what has to be measured, they produce it" (In Bell 2004).

1944 Erwin Schrodinger: "What we call thought (1) is itself an orderly thing, and (2) can only be applied to material, i.e. to perceptions or experiences, which have a certain degree of orderliness" (Schrodinger 1992: 9).

1948 Claude Shannon: With his paper *A Mathematical Theory of Communication* Shannon becomes the founder of information theory. The concept of information entropy is introduced as the amount of uncertainty in the outcome of random process (Shanon 1971).

1969 Kanrad Zuse: The universe is a digital computer (in *Calculating Space* 1969, originally in German *Rechnender Raum* 1967).

1985 Freeman Dyson: "Mind, as manifested by the capacity to make choices, is to some extent inherent in every electron" (Dyson 2004).

1985: Eugene Wigner: "The content of consciousness is the ultimate universal reality" (Wigner 1995).

1986 David Bohm: "Deep down the consciousness of mankind is one. This is a virtual certainty because even in the vacuum matter is one" (in Riggio 2007: 66)

1989 John A. Wheeler: "Quantum physics requires a new view of reality; All things physical

are information-theoretic at origin, and this is participatory universe" (Wheeler 1989).

1990 **John A. Wheeler**: "Information is fundamental to the physics of the universe. According to this 'it from bit' doctrine, all things physical are information-theoretic in origin" (Wheeler 1990).

1990 **Edward Fredkin**: "Digital Mechanics is a model of physics that assume space-time is an unusual kind of Cellular Automata" (Fredkin 1990).

1992 **Edward Fredkin**: "The world of our normal experience is a virtual reality generated by a great computer as a cellular automaton" (Fredkin 1992).

2003 **Nick Bostrom**: "Are we living in a simulation?" (Bostrom 2003).

2007 **Seth Lloyd**: In his book *Programming the Universe* Lloyd proposes that the universe is a giant quantum computer (Lloyd 2007).

2017 **Neil deGrasse Tyson**: "I find it increasingly difficult to argue against the possibility that we are living in a simulation" (Tyson 2017).

Below are Campbell's major claims put in context.

- "Everything is virtual." The idea that reality is a digital information system and that we are living in a digital simulation has slowly become its own brand of physics: 'digital physics'. The term was first proposed by Konrad Zuse, the designer of the first programmable, fully automated digital computer: in his book *Calculating Space* (1969) he proposes the idea that the universe as a digital computer. J.A. Wheeler, Edward Fredkin, Seth Lloyd are some of the notable contributors in this field. Fredkin, an early pioneer in the field of digital physics (*aka* digital philosophy), unequivocally declares that in order to make sense and to agree with quantum discoveries, the nature of reality must be digital; at the basis of this digital reality seats the Ultimate Computer that computes our physical existence through information processing. The location this Ultimate Computer resides, Fredkin designates as 'Other' (Fredkin 2003).
- "We are living in a simulation." Nick Bostrom proposed the Simulation hypothesis in 2003.
- "Consciousness is the fundamental substance." Many physicists support a version of this idea. Among those are Max Planck, David Bohm, J. A. Wheeler, and Freeman Dyson. In *What is life?* from 1944, Erwin Schrodinger writes about the unitary fundamental character of consciousness. The Nobel Prize winner Eugene Wigner deduces as early as the 1930s that the quantum description of objects is influenced by

impressions entering consciousness (Wigner 2014: 173); proposing the idea of consciousness as the basis of our understanding of reality for decades, he reconfirms in the 1990s that the content of consciousness is the "ultimate universal reality" (Wigner 1995). From a different perspective, that of quantum gravity, Sir Roger Penrose and Stuart Hameroff propose their theory of the mind, the Orchestrated objective reduction (2014), submitting that consciousness plays an intrinsic role in the universe.

- "The content of consciousness is information." Claude Shannon is considered the founder of information theory, with his book from 1948 *A Mathematical Theory of Communication*. Throughout the following decades and especially in the 1980s, it becomes exceedingly clear that information is deeply woven into the fabric of reality. Information and consciousness interface in Edward Fredkin's essay, "On the Soul" (1982). John Wheeler – the visionary physicist who coined the terms 'black hole' and 'wormhole' – points, "All things physical are information-theoretic at origin, and this is participatory universe" (Wheeler 1989). In neurobiology, Bernard Baars proposes a cognitive theory of consciousness (1988), in which consciousness is the act of broadcasting information around the brain from a memory bank. In neuroscience, Giulio Tononi develops the Integrated information theory (2004), rooted in Shannon's information theory, according to which consciousness is a fundamental, intrinsic property of any system, which could be measured as the physically integrated information.
- "There is a fundamental process that explores everything and that allows what works to propagate" leads directly to the theory of evolution by Darwin.
- "Matter is converted energy" is an interpretation of Einstein's $E=mc^2$.

These are the major tenets on which Campbell bases his theory. As evident, they are well debated and discussed propositions. Where Campbell original contribution lays, is at interpreting and integrating these tenets in a possible scientifically informed scenario. While Deleuze and Guattari rhizomatize and deterritorialize the ideational repertory, while Bohm metaphorizes his Hidden variable interpretation in abstract concepts, Campbell absorbs philosophical concepts and scientific findings to metabolize them into a dramatic ontological model, based in science. Thoughts, started with Bohm and Deleuze and Guattari, find in Campbell a possible territory on which they can dialog, assess, measure up, categorize and reorganize – and perhaps create a new idea.

As a science-based investigation of the boundaries of reality, the author claims that he has made "every effort to approach his explorations without bias or preconceived notions. There is no belief system, dogma, creed, or unusual assumptions at the root of My Big TOE:"

> By demanding high quality repeatable, empirical, evidential data to separate what's real (exists independently and externally) from what's imaginary or illusory, Campbell has scientifically derived this general model of reality (Campbell 2014[81]).

The purpose of these statements is understandable, one could never be too careful when proposing a TOE.[82] The issue mainstream scientists take with TOEs that explore the "boundaries of reality" is precisely their 'scientificity': the philosophy of mechanistic materialism dominating reductionist science is that the truth about reality is to be reached through an objective investigation of matter and its processes, with measurable, repeatable results. But then, 20th-century's empirical evidence suggests that not only do we "produce our reality," as Bohr' associate Pascual Jordan observes (in Bell 2004: 142), but it has become increasingly difficult for quantum mechanics to answer the question of "what, if anything, objective reality is," argues theoretical physicist Nikolic (2006:43). Historically, the mind/matter split originating the belief that nature and matter are inert and mute, arise as a reaction against the superstitious animism the Medieval mind was possessed by. Descartes' ideas were revolutionary at the time because he was reacting against a simplistic, uncritical and uninformed view of reality. Today the dynamics are reversed – the approach to the physical realm as self-evident, mechanistic, mute, and objectively existing 'stuff' becomes an indication for a narrowmindedness, for a simplistic and outdated view of reality – as research emerging from cosmology and theoretical physics, quantum mechanics and consciousness studies, demonstrates. The challenge before us today is, some believe, not the question of consciousness; the hard question has rather become, what is matter? Given that consciousness is perhaps the only undisputable fact of our reality we can be certain of, and that all our information about the physical world we derive through a mental process resulting in data interpreted by our consciousness, this reversal of attention is rather on point. Philosopher Gelen Strawton, for example, is one cautioning against the "Very Large Mistake" – the assumption that we know enough about the physical world to weed out the possibility that consciousness is physical (Strawton 2016).

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[81] https://www.my-big-toe.com/about/

[82] The lack of peer reviews of Campbell's *TOE* is unfortunate: this is partly a result of author's publishing choice and his desire for the book to reach a larger audience.

Then, there is the problem of methodology: how is one to study a subjective experience phenomenon scientifically, given that 'scientific' presupposes 'objective'? Campbell's answer is rather straightforward: consciousness is subjective, therefore it needs to be studied subjectively, by using the scientific method (observation, documentation, repeatability, predictability). Campbell's research claims that meditation is a reliable technique, which provides the means to studying alternative states, the subjective and objective mind. Numerous studies in recent decades have confirmed the benefits of meditation, establishing that to the regular practitioner meditation brings positive changes in both mind and body, e.g. emotional stability, psychological balance, change in brain structures and more (Crescentini et al. 2017, Gotink et al. 2015, Goyal et al. 2014). Campbell, however, uses meditation as an medium, as a mode of transportation to out of body experiences, as they are known since the pioneer of alternative states consciousness research Robert Monroe coined the term in the early 1970s. To achieve success, e.g. "high quality repeatable, empirical, evidential data to separate what's real (…) from what's imaginary or illusory" takes consistent, unyielding practice. "The fact is that progress in meditation, like progress in playing musical instrument, usually accrues slowly and only becomes dramatic after significant time and effort has been invested" (Campbell 2007: 179). Thus conceived, meditation research is in line with artistic practice, where one must journey out of the confinement of self-consciousness to encounter and decode the message of the medium, meeting it halfway. The reward is discovering that you are an integral part of a larger reality.

Content and Process in Thomas Campbell's Big TOE

The last sentence contains one of *My Big TOE*'s fundamental precepts, that the reality we experience is a virtual simulation of a more fundamental reality. Originates in the mystical and weaves throughout the philosophical, to surface in the scientific plane, this idea constitutes one of the most ancient and fundamental metaphysical insights. From ancient Hindu and Taoist literature[83] through Cartesian dualism, Kantian *Ding an sich* and Schopenhauer's world as representation, to present day mathematical interpretations (Fredkin, Bostrom, deGrasse, Susskind), the idea of an underlying reality is continually employed by human imagination to explain human condition. Today, this idea is a staple hypothesis in branches of theoretical physics, like digital physics. Campbell himself makes a distinction between the latter's premise and his 'simulation theory', explained as follows:

[83] E.g. the Vedic notion of Maya (i.e. the world is an appearance) and the works of the Taoist poet Chuang Chou (*The Butterfly and the Dream*) from 3d century BC.

> Wheeler[84] advocated that "Quantum Physics requires a new view of reality" integrating physics with digital (quanta) information. Two such views emerge from the presupposition that reality could be computed. The first one (…) *proposes that the universe is the computer*. The second one, which includes the simulation theory (…), suggests that the observable reality is entirely virtual and the system performing the simulation (the computer) is distinct from its simulation (the universe) (Campbell et al. 2017: 70 emphasis mine).

What follows is an attempt to concisely present Campbell's theory of everything (TOE) in its more important points.

Figure 15// Campbell's precept on reality, information and experience.

Consciousness, Campbell proposes, is the ultimate nature or reality, its 'building blocks'. On a most fundamental level, consciousness' content is information, information is bits, and bits are binary.[85] Therefore, the larger consciousness system that encompasses all existence, is a digital information system.

[84] John A. Wheeler (1911-2008) is one of the eminent 20th century physicists, advocating the idea of the informational nature of reality, as in 'It from Bit'.

[85] Campbell's views on the binary basis of reality adjust according to scale, he maintains that from human perspective our reality cannot easily be reduced to 1s and 0s, but from a 'big picture'

"There is no objective reality, objectivity is understood as the commonality of the viewpoint" is one of Campbell's precepts on information (Fig.14). This extreme subjectivity, however, is communication-dependent, Campbell's philosophy stresses the importance of engagement with the world: 'Other' provides opportunity for the improvement of the quality of your consciousness by accurately reflecting the truth of you:

> Consciousness is fundamentally individual and personal … Our objective experience of other consciousness is the result of an interaction of our personal consciousness (…) with another, which suggests to us new configurations, interactions and possibilities for **our** being. We project our awareness of consciousness into "other", define the nature of "other" in terms of ourselves, and thus see only a reflection of ourselves in the mirror of interaction with "other" (Campbell 2007: 170, emphasis in original).

According to the theory, the ultimate purpose of existence is to grow and improve the quality of our consciousness by reducing entropy, the evolutionary motivator of consciousness. Campbell defines entropy as a measure of disorder. More entropy means more disorder and less energy that is available to do work: "Improving the quality of your consciousness, evolving your being, and decreasing the entropy of your consciousness are all essentially synonymous and equivalent" (Ibid.: 157, 197). The entropy definition of theoretical physicist Leonard Susskind, on the other hand, probes into different dimension of the term: Susskind sees entropy as the hidden information (Susskind 2011). Therefore, the aspiration of a conscious being, entity or a system, is to organize hidden information into coherent messages or bodies of content so that the available reality is digestible, suitable for integration. It is no wonder that Campbell lists among the highest entropy states fear, but also belief and ignorance – to belief blindly is to accept high entropy (loads of hidden information) as a fundamental precept. Conversely, unconditional love and open-minded skepticism are the markers of a low entropy state.

My Big TOE is based on two assumptions: 1) The process of evolution is fundamental; as a fractal process, it applies to all levels of development, and 2) The primordial consciousness is a fundamental source of structurable energy (Campbell 2007: 182). All ideas in *My Big TOE* are conclusions derived from these two assumptions. Let us now see how these two interact.

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perspective this is indeed the case. See 'Tom C"s answer to a forum thread here https://www.my-big-toe.com/forums/viewtopic.php?t=2780

The process of evolution is fundamental to all conscious entities and systems, to all levels. It is a fractal process, which works through weeding out stale possibilities, exploring all available states and allowing whatever works to progress forward:

> The Fundamental Process works basically the same way with all kinds of entities: physical, nonphysical, human, insects, bacteria, molecules, rivers, mountains, rocks, Forganizations, nations, consciousness, automobiles or computers. The differences in the evolutionary pattern in animals, organizations, consciousness and technology are not due to differences in the evolutionary process, but rather to the variety of entities and to the variety of environments and constraints that define the criteria for their profitability (Ibid.: 199).

Here, Campbell echoes the renown evolutionary biologist Stephen Jay Gould who sees evolution's drive not toward 'progress' or 'complexification' but toward 'diversification' (Gould 1996). The process of evolution as a method of becoming – not becoming-better but be-coming – is Campbell's one 'law of nature' that stirs the wheel of existence. The content of existence is defined by Campbell's special 'free miracle'[86] – the author assumes that there is an apparently infinite, absolute, all-pervasive oneness, the basis of existence, beyond space and time: "It is simultaneously everything (in potential) and nothing (no differentiations, no boundaries)" (Ibid.: 188). From our limited three-dimensional perspective this oneness must appear mystical, he explains, since we are not equipped with the ability to grasp it. In order to grow, this Absolute Unbounded Oneness (from here on AUO) needs the Fundamental Process (of evolution).

By default, the AUO is not intelligent or self-aware. Campbell refers to it as an "immense unstructured but structurable form of digital potential energy" (2007:190). He considers AUO an entity:

> An entity is a well-defined, self-contained (bounded) interactive system. It can be an atom, molecule, rock, technology, computer, worm, monkey, human, organization, city, nation, planet, or an aware individual nonphysical consciousness. The interactions of an entity with its internal and external environments is constrained by what those environments will support, encourage, or discourage. Thus, constrains (…) are the source of evolutionary pressure (Ibid.:191).

[86] "As Terence McKenna observed, "Modern science is based on the principle: 'Give us one free miracle and we'll explain the rest.' The one free miracle is the appearance of all the mass and energy in the universe and all the laws that govern it in a single instant from nothing"." (Sheldrake 2009: xiii).

I return to this definition of 'entity' later when I discuss the musical work. As entities evolve by responding to pressures from their external (survival and propagation in a biological system) and internal (mutation in a biological system) environments, Campbell assumes that AUO begins to organize its potential by responding to internal environmental pressures, interacting with itself. Thus, AUO's evolution begins.

Campbell makes an important distinction between consciousness and awareness, he compares them to love and care for others – the former just is, while the latter differs in degrees. As a system of consciousness hosting only dim awareness, AUO cannot hold a single thought initially. It begins to evolve by creating a duality within itself, this vs. that, much in the way life in the primordial ocean on Earth is thought to have begun – through random combination of bits the system 'discovers' a disturbance within its uniformity. This single localized modification/disturbance is all that is needed to derive "ourselves, our physics, and the rest of our reality" (Ibid. 205). Campbell calls it a reality cell (Ibid.: 218). Once the first reality cell is formed and the idea of difference – hatched, AUO begins to exponentially grow local disturbances. Thus, the capacity for forming patterns and groups of patterns of patterns, and the potential for exploration and complexity increase significantly. The awareness of AUO - too. Having provided itself with raw operational material, the next step on AUO's evolutionary path is to find ways of organizing this material so that the cells can interact, be arranged and rearranged, stored, retrieved, used and share information. This higher organization naturally leads to memory and pattern processing, to development of consciousness. In the scenario enters the Big Computer (homage to Fredkin's Ultimate Computer?).

Campbell describes the Big Computer as AUO's own form of mathematics – the system has evolved to develop a section of itself dedicated to storing (memory) and processing information, to rules and operations; its function is to increase the organization and decrease the entropy of AUO. In order to exploit the potential inherent in this increased order and organization, AUO 'invents' time. Time is a technology that enables consciousness to organize its content more effectively, states Campbell, it separates the 'before' from the 'after' state. "Change creates the notion of time" (Ibid.: 239). With time, which allows for ordered events and sequence to carry and propagate content, the possibilities of AUO for complexification and growth are staggering: time acts as a catalyst, "dramatically enhancing AUO's ability to self-organize, thus speeding up the interaction between the Fundamental Process and consciousness" (Ibid.: 240).

Thus upgraded, AUO is enabled to further diversify and produce various self-organizing and locally contained sections of itself, termed NPMR – Nonphysical Matter Reality, connected through a communication network managed by The Big Computer. It is at this point that AUO transitions into a more efficient powerhouse of a consciousness system-entity Campbell names AUM, the Absolute Unbounded Manifold. AUM[87] is much more organized and efficient than AUO, with greater capacity to lower entropy. To bolster further still its process of growth, AUM sponsors the creation of various PMR systems, the acronym standing for Physical Matter Reality. Our system is one of these PMRs. Both NPMR and PMR are virtual realities, their major difference is on the levels of constraints – PMR has more rules and is more lawful, which renders its scope and sequence more conducive to learning. Campbell describes our particular PMR as a kindergarten nursery of budding IUOCs, Individuated Units of Consciousness.

The IUOC resides in the larger consciousness system as our digital mind. Depending on whether it serves as an agent in AUM, in NPMR or PMR, this IUOC switches gears and interprets its present virtual reality according to its own protocols and rule sets (the experience in our PMR is more limited). The IUOC is the more general term, it is our digital consciousness containing the accumulated individual knowledge that learns through its 'incarnations' in different reality frames. Each 'incarnation' is a FWAU, Free Will Awareness Unit – the experiencer, the avatar. (Right now, my FWAU is wondering whether this exposé has not passed beyond reader's acronym tolerance limits.) Once I seize to be, here in this PMR, I join my larger identity, my IUOC, to examine and evaluate my experiences and choices in this 'incarnation', to outline strategies for future learning and VR experiences that will best aid my growing, reduce my entropy and through it – the entropy of AUM.

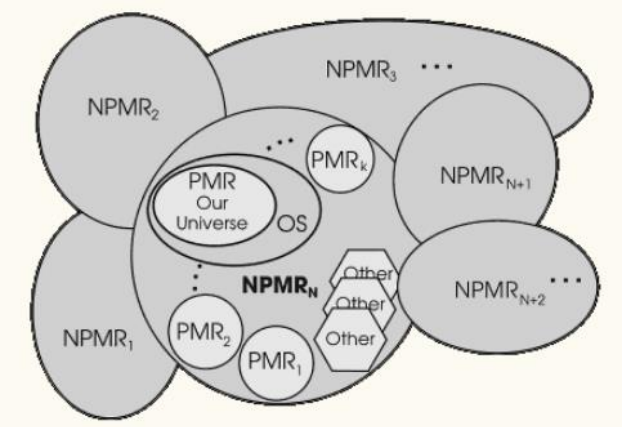

Figure 16// Different reality systems in AUM.

As evident from the image above our PMR is just one of many physical matter reality frames, where sentient entities (FWAUs) exist and interact according to their own rule sets. Each reality frame represents a kind of experimental protocol. Our is one of the more lawful

[87] It is not an incident that AUM (or OM) sounds like the initial sound in Hinduism.

experiments: on a scale 1 to 10 Campbell assigns our PMR 8 on a number of rules and how constrain it is by these rules. The rules are needed for otherwise ordered learning is very difficult.

Naturally, one has many diverse curiosities and queries upon contemplation of *My Big TOE*. The relevant question here is, what such a carefully thought out big picture theory that claims to have an answer to everything, can tell us about music? How embracing this theory changes our understanding of music?

MUSIKA's inception

In Campbell's hypothesis of everything featuring entities, dimensions, systems, codes and processes represented by an ample number of acronyms, music is mentioned but a few times, as a passing reference to meditation and an example of what could be achieved through a committed practice. What follows, then, is a hypothesis built upon another hypothesis. Campbell repeatedly demands disbelief, skepticism, and an open mind. He argues that practice results in experience that renders any belief moot, replacing it with knowledge. Although I am a committed and disciplined meditator, I admit that I have not had many out-of-body experiences: with this disclaimer I declare that my proposition here is based on intuitions, understandings, and insights I have had of music and through music, during my musical practice. My 'knowing' of Campbell big TOE's validity is musically derived, and so I expect my 'burden of proof' would appeal most to practicing and performing artists.

In my master thesis "Possibilian Theory of Music: a Rhizomatic Approach to Music as Consciousness" (2014) I have already proposed that music could be interpreted within the context of Campbell's big TOE. My basic assumption there is quoted below at some lengths, as it is the springboard for my proposition in this PhD thesis.

> (*Musika*) exists as a reality frame, a dimension set in motion as one of the experiments of the Larger Consciousness System. It has its own experimental protocol and its own rules and constrains. Perhaps *Musika*'s constraint level is much lower than that of our physical matter reality. *Musika* (…) evolves through tuning into sentient beings' processors (brains) and gaining experience through their application of its input through music – the window to *Musika*.

> Therefore, by this definition *Musika* is a broader term. We could regard it as a soundscape, an individuated conscious incorporeal entity dwelling in a state of probability. It is binary by nature: sound/silence = on/off. From probability distribution *Musika becomes* through a medium – a human, a non-human animal of other sentient entity with ability to organize and express itself through sound (…). The mediator provides embodiment. Through this symbiosis *Musika* goes forward by the process of mixing, combining, rearranging possibilities (its bits), constantly creating new forms of expressions and growing toward ever more organized states, thus lowering its *entropy* (…). Its manifestations (like performance, mantra, surah, concert, ritual etc. for the human, echolocation for the humpback whale, mate attraction for the house wren etc.) are designed according to the auditory system of the medium, its biology and culture, for each sentient is 'imprisoned' in its *umwelt*. According to this broader understanding of music, it is evolving along, but not limited to, us humans.

Back in 2014 I made a differentiation Musika-music-musical assemblage, not too different from the iconographic triad proposed by Hans Belting as image-medium-body (discussed below); although inspired by Campbell's theory, my master thesis was most concerned with justifying this differentiation. Back then, I regarded Musika as a Nonphysical Matter Reality sonic entity that tunes in physical matter reality sentients' consciousness to surface embodied as music/al assemblage. Meanwhile, looking deeper into how the musical triad fits into *My Big TOE*, I have realized that the idea of Musika has a potential to evolve and a desire to articulate itself. I shall begin my discussion by zooming in a couple of 'mutations' of the original idea as stated. The first one concerns Musika's content, the second, its ontological status.

Originally, I have proposed that Musika is an entity, for Musika does indeed correspond to Campbell's definition of entity as a "well-defined and self-contained, interactive system" (full definition above). This proposition is consistent with Bohm's ontology, in accord with which I define music as a sub-totality (in Chapter 2). Musika as a NPMR can indeed be regarded as an independent sub-totality (after Bohm) abstracted from AUM, with its own set of Implicate Orders and with a special case of Explicate Order, music (elaboration follows). Just as our PMR is a localized, self-contained reality frame so is Musika as a NPMR frame, a probabilistic soundscape, home of all things sonic. But devil is in the details. Campbell regards space as a technology, an extension of time, which is applied to our, among others, PMR as the third dimension: in the NPMR space does not exist, stresses Campbell

repeatedly. This point seriously hinders the above-described status of Musika as a nonphysical reality frame/entity: as stated in the previous chapter, sounds can only exist within the context of physical space – no space – no sound, let alone music. David Worrall, an experimental composer and a sound artist, distills the matter of sound and space relationship down to a mere preposition, as follows:

> Sound is not an abstract ideal projected into 3-space. The space is *in* the sound. The sound is *of* the space. It is a space of sound, but there is no sound *in* space (Worrall 1998: 97).

Hence, it would seem that in an NPMR existing with-out space, we can have no sounds. Therefore, Musika cannot exist as a nonphysical domain of all things sonic, for sound is physical.

This logical solution requires an adjustment or modification of my original idea. If Musika is to be grasped in other-than-sound terms, the important question becomes: is Musika sound, and if so, to what extend? In his book from 2005, *Image, Medium, Body*, Hans Belting defines medium as the agent through which the images are transmitted, and body is either the performing or the perceiving body on which images depend, no less than on their respective media (Belting 2005: 302). Images, although happening or taking place through mediums and bodies, are of different nature. It follows that the image of a sculpture is not in its stone, the image of a painting is not in its pigments. There is a clear-cut distinction between material as solid, enduring, and sharable media with their tendency to regress into high entropy, and that which streams and gleams through them and which finds and addresses you personally. In this sense Musika as an image or a generator of images in iconographic sense, or Musika as concept, is no more a bunch of sounds than thought – the virtual, intangible jewel in the crown of consciousness – a bunch of electrochemical neural reactions. Therefore, we need not get dispirited by the fact that sounds, as space embodying phenomena, cannot exist in a NPMR, for there are at least two solutions of the problem: firstly, there may be other reality frames that have space as fundamental construct and Musika may be one of them, and secondly, there might be ways to conceptualize Musika independently of its sonic capacity.

This state of affairs leaves us with two models for the ontological status of Musika, local and nonlocal, which both have their strengths and weaknesses, their appeals. The local version of Musika prompts a vision of a reality frame, perhaps not quite like our own PMR, but certainly with some physical characteristics, that contains, forms, and evolves sound forms of

consciousness in a symbiotic fashion. It is this version I am going to explore in the remaining of Chapter 3.

A local model of Musika

Mirror is a remarkably popular and effective metaphor, showcasing a variety of claims for music's subjective and objective powers of representation. Above all those glitters music aficionado's favorite "Music is a mirror to the soul." But there are also Karl Marx' music is the mirror of reality; Nietzsche's music as a Dionysian mirror of the world (2000: 39); Roger Elbourne sees music as a mirror of society (1976), Robert Greenberg, mirror of history (2016), Jacque Attali – a play of mirrors (1985: 5), Birgit Abels – a sonic mirror space (2014), and even yours truly joined the chorus with the diffracted mirror metaphor inspired by Haraway/Barad (in the previous chapter). Obviously, mirror is a good fit to conceptualizing music for it captures some of its physical-yet-ineffable, revealing-yet-ghostly, here-and-there demeanor. However, music-as-mirror metaphor suffers at least two serious deficits – one, it is an inconsolably visual one, and two, it places the emphasis on the 'I' who looks in the mirror, using the latter as a tool (for beautification, verification, enhancement, learning, etc.). This self-positioning presupposes that we know all about music and therefore find it quite useful as tool to inquiring into and analyzing the human being and its societies and conventions – which we admittedly don't know all about. From this, a paradoxical conclusion logically follows – the mirror metaphor implies that music is, somehow, mute. Because certainly, in the relationship with music it is us who are calling the shots. Right?

Here I propose to reverse the table and seriously exercise the possibility that it might be otherwise. Like Michael Pollan, scientific journalist and professor at Berkeley, who asked himself one May day while planting potatoes in his garden – what if it is not us who manipulate, clone, select and propagate plants to get from them what we want, but the opposite – the apple indulges our taste for sweetness, the tulip seduces us with its beauty, the marijuana tempts us into intoxication – to get what they want? Adopting the eye of the Other, Pollan retells the story of our relationship with plants and reintroduces them as agents with sophistication, intelligence, memory and desire.

> We don't have a very good vocabulary talking about how other species act on us, about their agency… [Our] grammar makes this relationship perfectly clear: *I choose the plants, I pull the weeds, I harvest the crops*. We divide the world into subjects and objects and (…) in nature generally, we humans are the subjects" (*The Botany of Desire* 2002: xiv).

But this is just a limitation of our language, he continues: “What if that grammar is all wrong, a self-serving conceit?” (Ibid.).

In the same vein of anthropo-de-centric reasoning, we may ask: what if it is not us, but music who looks intently in its mirrors searching for a feedback, for definition and meaning? Campbell’s big TOE offers an interesting set of plots and settings to explore this idea.

To begin, let us recall that our PMR (physical matter reality) is just one uniquely constrained space-time application, existing in a space-time part of AUM (absolute unbounded oneness). According to Campbell, there are other spacetime regions of AUM corresponding to other PMRs (Campbell 2007: 269). The physicist compares these specialized subsets of AUM to what different systems of thoughts, or books, are to us – experiments in consciousness evolution, unique and different from one another. Each independent virtual reality frame (also defined as ‘dimension’) begins to evolve its own uniquely profitable configurations as its possibilities are explored. It is reasonable to assume that these experiments are not entirely random, but follow a method – perhaps exploring different elements, or themes, or material, or content. It is possible that one of these reality frames is customized for sonic evolution, as compared to our PMR concerned with propagating carbon-based life-forms. I name it Musika. Musika, like Universe, has a spacetime rule-set, but its level of constraints is perhaps lower than it is in our PMR. Remember, Campbell determines latter’s constraint level as 8 on a scale 1 to 10, suggesting thinking of rule-sets as “data filters that define (…) energetic interaction with the data. You may have read privileges only, or be allowed to read, write, and modify” (Ibid.: 476). Musika, I propose, works with lower constraint level, with fewer and less rigid ‘laws of nature’. This means that its reality frame fosters a ‘decision space’ significantly less prescriptive and micromanaged by its ‘laws’ than ours; it also means that Musika by default has a higher entropy. In such a reality a lot more is vague and conjectural and a lot more is possible. Less rules also mean more variety – the continua of unbelievably beautiful and unfathomably horrid, of heavenly and hellish are stretched well beyond our capacity to perceive and evaluate. As a fractal of the Absolute Unbounded Manifold, Musika begins evolving by exploring all possibilities, by creating difference within its primordial hum uniformity of destratified sonic potential brimming with entropy. Once the first disturbance within this uniformity is ‘discovered’, a sonic reality cell is formed; as soon as it figures out how to change states, e.g. ‘before’ from ‘after,’ the process of sonic diversification begins. Based on the history of the biological cell and the differentiation of digestive-, motor-, sensor-, control- etc. sections of the early multicellular organisms, we might speculate that clusters of sonic reality cells liaise with one another in a series of

specialization experiments, shaping Musika's systems, i.e. of pitch, pulse, timbre. Given enough time, these specialized aspects of Musika begin connecting and communicating with each other in a coordinated activity that can propagate and regulate content and patterns of content, and that modulates expression, like the ideas of tempo, rhythm, texture, and dynamics. "Signals and messages can be passed from cell to cell as fast as one cell can change state in response to an 'adjacent' cell changing state" (Campbell 2007: 240). Is not this, in fact, what tonality does?

(Apropos tonality as a system of organization, it is worth opening a caveat to briefly discuss the work of Princeton's composer and music theorist Dmitri Tymoczko, namely, *The Geometry of Music* (2010). In this book Tymoczko argues for the inevitability of tonality:

> Tonality is not one among an infinitude of habitable planets, all easily accessible by short rocket flight; instead, it is much closer to being the *only* habitable planet that we have discovered so far (Tymoczko 2011: 393, emphasis in original).

The author justifies this claim by exploring the tonal music – in the broadest sense of the word – from the beginning of Western polyphony to modern days pop-, rock- and jazz genres. Tymoczko argues that there are five common features represented all across styles and musical époques that make up the sense of tonality: conjunct melodic motion, acoustic consonance, harmonic consistency, limited macroharmony and centricity – these are interlaced, interconnected and interrelated in multiple ways. As the title shows, Tymoczko approaches music as a geometric puzzle, whose solution is often based on non-Euclidian geometry – it treats chords as points in higher dimensional spaces, "a good deal more interesting than the plain-vanilla space of ordinary Euclidean experience" (Ibid.: 65), e.g. twists, mirrors, and Mobius strips. In short, in proposing a unifying mathematical framework for music, Tymoczko offers a view on music theory based on (mathematical) principles rather than on a group of intrinsic, self-organizing dos and don'ts. In my reading of Tymoczko, these principles of tonality are not unlike the Laws of nature of physics that classify our planet as a Goldilocks type (not too far or too close to the Sun, with the right speed of spin, with just the right tilt etc.) – indeed, in the sense the author concludes that "the development of Western counterpoint is something of an amazing accident" (Ibid.: 64), tonality also is a Goldilocks type phenomenon. The reason Western music's tonal sonorities are foreordained or optimal is twofold:

> Considered as individual sonic objects they are acoustically consonant and hence sound pleasing in their own right; but since they divide the pitch-class circle nearly

> evenly, they can also be connected to their transposition by effective voice leading. Any composer who cares about harmonic consistency would therefore have reason to choose these chords, even if he or she did not care a whit for acoustic consonance" (Ibid.).

This situation Tymoczko summarizes in his suitcase parable, in which at the beginning of time God asked people to choose the best chords for their music – whether the request came from the 'cerebral' type demanding nearly even chords efficient for voice leading and harmonic consistency or from the 'hedonists' whose concern was the ear pleasing consonant, God invariably handed a suitcase containing "the perfect fifth, the major triad, and dominant seventh chord" (Ibid.)[88]. . . .

Naturally, Tymoczko's modal is based on the conditions and specifics of our PMR. Whether or not tonality is the God-chosen system in Musika reality frame too, is not a concern at present. I adduce this hypothesis on music's geometric consistency grounded in tonal systems to demonstrate that tonality itself could and is used as the musical equivalent of primordial soup's organizational principle. Where Tymoczko gives preference to a musical becoming based on mathematical logic rather than on the idea of self-organization and natural emergence (are these excluding of one another?), I treat the matter more economically, proposing that the organizational principles of music are not music-specific or derived from other, superior principles, e.g. mathematical, but are the basic organizational principles of the Fundamental process, a.k.a. evolution. Major among those is the principle of diversification – try everything and see what works. As per mathematics, My Big TOE submits that it also has evolved from the Absolute Unbounded Manifold and the Big computer, like everything else.)

Each theory begins with some assumptions. Whether Musika eventually evolves 'life forms' of consciousness – not unlike our Universe evolves to compose (galaxies, suns, planets, natural laws, and) life on Earth in all its diverse expressions – is presently a matter of *bona fides* guessing. However, I strive to apply logic to this guessing. If, on a fundamental level, all that is, is an organized digital informational content of Absolute Unbounded Manifold's (AUM) substance (consciousness), the existence of sonic entities seems at least as plausible as the existence of thought-entities, or for that matter, the existence of carbon-based entities. The complexity of the life form and the quality of its consciousness result from said life

[88] Although Tymoczko does not explicitly discuss other than 'Western' art music, his references suggest that his basic model might be inclusive of other systems of organizations, like rāga or maqam.

form's evolutionary process, as functions of its learning through interactions with its internal and external environments. For Campbell himself,

> [I]n AUM's world of digital consciousness, energy thoughts (discreet packets of organized content) are real things – the only real things – and AUM can birth (think up or organize) as many as it wants to. Think of a thought within AUM as a reusable object, a chunk of fixed or variable content with certain attributes, characteristics and abilities that can be stored, transmitted or used as an operator (Campbell 2007: 297).

Driven by the process of evolution, the potential in Musika's sonic soup of uniform hum evolves to a more organized, functional, ruly and perhaps more aware entity. This upgraded version of Musika begins seeking opportunities for further, faster, better growth, for reducing its entropy. For that, it needs experiences with clear feedback mechanisms that enable, facilitate, and accelerate learning. Experience requires interaction. Conceptualizing the possible interaction between sonic entities in Musika reality frame (from here on, MRF) is beyond the scope of this thesis. My hypothesis is that, as the rules in MRF are more liberal and with a low constraint level, the outcome/feedback of interactions must be quite fuzzy and a subject of interpretation. This may be one, if not the main, reason for sonic entities of MRF reaching out to hosts from other reality frames. It is possible that, similarly to the conditions in NPMR, Musika reality frame does not offer the optimal environment and rule-set for the evolution of individual consciousness quality (see Ibid.: 561); there too, like in NPMR's mind-space, learning may be difficult due to weak interactions and personal anarchy resulting from the lack of clear rules, low definition of responsibility and accountability, cause and effect, feedback of intent (Ibid.: 563). PMR, on the other hand, as a "kindergarten for young, low quality consciousness" (Ibid.: 366), affords excellent conditions for growth by providing simpler, more regulated and constrained environment. This is how 'we' enter the narrative.

Following this train of thought, I propose that music, in the sense we commonly understand it, is a result of a symbiotic rapport between the denizens of MRF and the sentients of PMR:

MRF + PMR => music[89]

[89] I thank Kitty Zijlmans for this equation.

Mutualist symbiont?

The link made in the previous subchapter between 'music' and 'symbiosis' already resonates with rich bioevolutionary harmonics. Unsurprisingly, I don't appear to be the first person to whom this thought has occurred, as we shall now see.

Music is made of people, declares the evolutionary neurobiologist Mark Changizi in his book *Harnessed: How Language and Music Mimicked Nature* (2011). There, Changizi develops his idea of emergent music evolution, which evolved from sound patterns mimicking and evoking people's movement. Distance, directedness, speed and gait/behavior are four important information markers of auditory software we and our predecessors in the jungle need in order to know other moving bodies' positions. Coordinating these markers allows us to make informed decisions about the nature, size and the intentions of other moving bodies, which makes all the difference between surviving or not. Is it a coincidence, Changizi wonders, that these crucial for survival auditory cues correspond to music fundamental structures – loudness, pitch, tempo, and rhythm? His answer is negative. Our auditory system evolved to associate and interpret – really, to understand – movements in nature. Music as evolutionary process has harnessed this understanding of people movement and has thus become particularly good at refining its inherent emotional content – it is from the character and dynamics innate to movement that music receives its emotional power.

> Language and music are evolved, organism-like artifacts that are symbiotic with… human apes. And like any symbiont, these artifact symbionts have evolved to possess shapes that fit the partner biology – our brains (Changizi 2011: 202).
>
> While it is not easy for us to see the human ingredients in the modulations of pitch, intensity, tempo and rhythm that make music, perhaps it is obvious to our auditory homunculus (Changizi 2009).

'Auditory homunculus' is a helpful metaphor. We can almost hear how this automaton picks up the nature and movement cues in-built in music below the threshold of our alert self-consciousness. It proceeds to distill the dynamic e-motion out of the structural motion-content. Literally made of processed people movement data, music emerges as a "cultural-artifact symbiont (…) coevolving with us" (Ibid.), mimicking nature.

The idea of symbiosis between unlikely parties has made some history in recent decades. Michael Pollan proposed in *The Botany of Desire* (2002) that plants and humans evolve

together in a kind of cross-species relationship of relatedness. He is one of the faces of the 'plant consciousness movement'. "It's the quantity, not the quality of intelligence that sets us apart. We exist on a continuum with the acacia, the radish, and the bacterium" (Stefano Mancuso, in Pollan 2013). And the insect, and the marine creature, we may add, as the recent tendency of probing into non-human species 'consciousness' does indeed include bees ("It still feels like something, to be a bee," Barron and Clein 2016), fishes ("A fish has a biography, not just a biology," Balcombe 2016), and trees ("Trees are social beings" Wohlleben 2016). We need not be too surprised by these suggestions and their implications. If paleo-biologists are to be taken at their word, consciousness-as-awareness may be as old as 3 billion years – the time when the last universal common ancestor or LUCA was filling the primordial ocean. The first single mega-organism, from whom diverged the three domains of life, i.e. bacteria, archaea and eucaryotes, existed, or shall we say, lived, between 2 and 4 billion years ago until 0.9 billion years ago when the first multicellular life appeared (scientist speculate that the decisive event of the split might have been the appearance of oxygen in the atmosphere).[90]

Of course, discussing (degrees of) consciousness in non-human species does not necessarily correlate to discussing music as a form of consciousness and a potential symbiont: biological organisms, such as fish, insects, plants, or cells are organic beings who, however different, are by orders of magnitude closer to humans' phenotypic makeup than constructs like music or language, stories or concepts. And it almost comes as a surprise to this line of thinking, to recognize the fractal nature of polyphonic voices attempting to embody the ineffable life of these cultural-artifact 'inventions' in actual terms. Carl Jung, for example, deliberating on the autonomy of ideas, concludes that it is not people who have the ideas, but the ideas who have people (The Red Book 2009: 248-250). In a similar vein, in his lecture "Language" (1950), Martin Heidegger again and again comes to the ritornello *Sprache spricht*: it is not man who speaks language, he insists, language (the speech) speaks man.[91]

Language speaks man? Language, an abstract phenomenon, routinely classified under the heading of 'expression' (Ibid.), speaks man – a physical, actual flesh and blood organism? Reflecting on the nature of concepts, Deleuze assembles a model that closes the gap between abstract and physical, actual and virtual, or shall we say, implicate and explicate as Deleuze

[90] More about LUCA: https://www.newscientist.com/article/mg21228404-300-life-began-with-a-planetary-mega-organism/ and https://astrobiology.nasa.gov/news/looking-for-luca-the-last-universal-common-ancestor/

[91] In his Amsterdam speech from 2010, the literary an cultural critic and scholar George Steiner talks about music being *Mysterium Tremendum* and, echoing Heidegger, says "Music plays us, we are played by it" https://www.youtube.com/watch?v=oKh7edvRvFQ

here almost verbatim describes Bohm's notion of the Implicate Order discussed in the first couple of chapters of this work. Defining 'concept' as a system of singularities appropriated from a universal thought flow, Deleuze asks us to imagine this flow as the "interior monologue of everyone who thinks," and then continues,

> One can also conceive of a continuous acoustic flow (…) that traverses the world and that even encompasses silence. A musician is someone who appropriates something from this flow: notes? Aggregates of notes? No? What will we call the new sound from a musician? You sense then that it is not simply a question of the system of notes. It's the same thing for a philosopher, it is simply a question of creating concepts rather than sounds.
>
> (…)
>
> In some ways, I tell myself that concepts are such living things, that they really are things with four paws, that move, really. It's like a color, like a sound. Concepts really are so living that they are not unrelated to something that would, however, appear the furthest from the concept, notably the scream.
> In some ways, the philosopher is not someone who sings, but someone who screams. (On Leibniz 1986).

Here, Deleuze makes two important points. Firstly, phenomena, like concepts or ideas, and the flow are evolving in feedforward cycles, as the ideas are first appropriated from the universal flow of "everyone who thinks" and then in turn, being phenomena of thought themselves, the ideas inoculate the flow, contributing to the universal pool of knowledge. This model concurs with both Bohm's organization of Implicate/Explicate Orders, and Campbell's fractal evolution virtual reality framework. Secondly, Deleuze fuzzes out the sharp contrast we customarily make between 'virtual' and 'actual' by emphasizing the tangible, visceral, real quality of concepts that scream man; like ideas, concepts have man and, like language, they speak man and, like sounds, concepts are created ('organized,' according to Campbell; 'abstracted,' according to Bohm) by the philosopher from this great flow (the holomovement?) that traverses the world. Zooming in closer still, Deleuze – the poet of the nonhuman – specifies that concepts are furry animations like animals, living things like sound.

But if philosophers tell us that ideas, concepts, and even language are living things and supersets of man, then we are confronted by the question of what constitutes a real living

thing? Viewed from a certain perspective, the line differentiating between 'living' and 'nonliving' is quite blurry. A compelling case on the matter presents the art historian Wilhelm Worringer: in his influential dissertation *Abstraction and Empathy* (1908) he discusses the affinity and the relationship between organic and inorganic forms from the perspective of art. On the one pole of the argument stands the realistic art with its natural curves and rational-sensual content, with its symmetries; on the other, the abstract art that emulates inorganic, geometric-crystalline forms. Through the representational approach we empathize with the manifested organic life by projecting our physical selves to the universe, and vice versa. However much we rejoice the organic world and our body in it, we simultaneously dread it for it constantly zooms in on the fly in the pudding: everything organic dies. The abstract art – and by extension, thought – "emanates from the deepest roots of [our] somato-psychic constitution" (Worringer 1908: 35), from our "spiritual attitude toward the cosmos" (ibid: 15, 34): the abstract curbs our greatest existential fear and responds to our yearning of the "static, inexorable, eternal" (Dittrich 2011: 246) by enabling us to revert to the most primitive line and form that precede all differentiations of the organic. Worringer rightfully notes that the tension between 'abstraction' and 'empathy' thus defined, resides in the problem of death: the urge to abstraction, as the root and content of artistic volition, develops out of a need to "create resting points, opportunities for repos, necessities in the contemplation of which the spirit exhausted by the caprice of perception could halt awhile" (Ibid.: 34-35). Worringer makes the proposition that the abstract, as an attempt to connect with what is unknown, is closer to the 'absolute' that is the source of all reality and life, than the organic or empathetic is. This view regards the organic and the nonorganic as tendencies of organization serving different goals. Philosopher Deleuze borrows Worringer's term 'inorganic' and develops further latter's ideas, crediting Worringer as the person to see the fundamental importance of the abstract line, "seeing it as the very beginning of art or the first expression of artistic will" (Deleuze and Guattari 2013: 577). As philosopher of the virtual and poet of the inorganic (metal, stone), Deleuze goes even further, when stating that not only the artistic will, but all living experience is but an abstract enterprise, "I don't live representation in my heart, I live a temporal line which is completely abstract. What is more abstract than a rhythm?" (Deleuze lecture 1978).

Through lenses such as these, which do not limit what is 'life' and 'real' to what is 'organic' or 'actual,' but which frame 'life' as something from which the organic unfolds, it becomes not only possible, but necessary to consider entities such as ideas, languages, concepts or music as living things – they all stem from the great flow, from the holomovement, from the

absolute, just like 'we' do. Writer Neil Gaiman takes a less abstract and more metabolic approach in considering the question of what constitutes a living thing – to arrive to similar conclusion. Using the Oxford dictionary's definition of life that includes "the capacity for growth, reproduction, functional activity and continual change preceding death," Gaiman reverses the usual arrangement of cause and effect, and reasons the following:

> You can just view people as this peculiar byproduct that stories use to breed. Really, it's the stories that are the life-form — they are older than us, they are smarter than us, they keep going. But they need human beings to reproduce, much as we need food… we need things to keep ourselves alive. Maybe stories really are like viruses… Functionally, they are symbiotic — they give and take back. The reason why story is so important to us is because it's actually this thing that we have been using since the dawn of humanity to become more than just one person. Stories are ways that we communicate important things, but … stories maybe really *are* genuinely symbiotic organisms that we live with, that allow human beings to advance (Gaiman 2015).[92]

In framing stories as viruses, Gaiman likely refers to Richard Dawkins' theory on memes as the epigenetic units of imitation, the viruses of the mind (1976). As life forms, viruses can be parasitic or symbiotic (Roossinck 2011). The trouble with Dawkins' view is that the memes as life forms are parasitic in their intent and multiplication process. Since we are interested in examples of a symbiotic relationship between stories – or music – and hosts, we need another theory.

This would be the theory proposed by George Van Driem on language as a symbiotic mutualist organism (2001)[93].

The chicken or the egg: Language and Music

At present, George Van Driem's anthropocentric theory on language as mutualist symbiont comes closest in spirit to offering a way to approach music as mutualist symbiont. Although language and music are different phenomena, as it is suggested below, they are close enough to be suspected of a similar *modus operandum*. As Van Driem's thinking is important to the development of my model, we shall briefly examine its main tenets. As far as it stems from a

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[92] Neil Gaiman, "How Stories Last" 2016, http://longnow.org/seminars/02015/jun/09/how-stories-last/

[93] Van Driem hypothesis is influenced and inspired by his professor's, Frederik Kortlandt, seminal paper on language from 1983, "A Parasitological View of Non-Constructible Sets."

sprawling debate on 'who's first, music or language?" the respective sides of the debate will also be outlined.

The hypothesis of the Leiden school of language as organism, known as symbiosism, has a long pedigree that includes luminaries as writer Victor Hugo and his idea of the word as a 'living thing,' the Darwinian linguist Gottlob Krause and his vision of a future 'etymological biology,'[94] certainly Richard Dawkins and his theory on memes as viruses of the mind, and, importantly, Van Driem's teacher's, Frederik Kortland, and his theories on language as a parasitic organism and a non-constructible set[95] (for a brief historical overview of *symbiosism* see Van Driem 2007: 7-10). The gist of Van Driem's contribution to the language-as-organism theory is as follows:

> The language organism is a mutualist symbiont living in a mutually beneficial relationship with its hominid host. Humans propagate language, whilst language furnishes the conceptual universe that informs and shapes the thinking of the hominid host (from Van Driem's page on semioticon.com[96]).

The forms of language are vehicles for the reproduction of meaningful elements in the hominid brain, Van Driem proposes, contending that meaning is the basis of language. As entities, meanings self-replicate from brain to brain. These entities are called memes, defined in the Leiden theory of language evolution (2005) as replicating units of meaning as opposed to replicating units of cultural information through imitation, as the term is initially coined by Dawkins in 1976 (Dawkins' 'meme'[97] is dubbed 'mime' by the Leiden theory of language). For Van Driem, meme is a "neuroanatomical unit corresponding to a sign in the Saussurean sense, i.e. the neuronal correlate of a meaning along with the neuronal

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[94] "To me, every word is a speaking creature, telling me its history once I have come to know it. I foresee a time coming in which one would speak of an etymological biology" (Krause 1895, in Lupke and Storch 2013: 337).

[95] On constructible and non-constructible sets see the lecture of Alain Badiou available on youtube as "Seminaire d'Alain Badiou 15 Fevrier 2016," and translated in English here: https://fragilekeys.com/2017/04/23/ethics-of-the-idea/

[96] https://semioticon.com/pool/george-van-driem/

[97] Interestingly, the meaning of 'meme' as formulated by Dawkins and as elaborated by the field of memetics, has undergone an evolution itself: it has become viral, taking over the Internet, social media, and the minds of the adolescents, where it has quickly mutated into meaning something very specific, namely, a short-living joke that gives laughter and joy to viewers – as anyone who has a kid or a teen can confirm (https://www.urbandictionary.com/define.php?term=Memes).

representations of its associated phonological form or grammatical manifestation" (Driem 2004).

Meaning, in the Leiden's sense of 'meme,' is grammatical or lexical, i.e. meaning in the dictionary sense of the word, as signification. The meaning as significance is formed by clusters of memes that form ideas. Ideas may be malevolent, agree Van Driem and Kortland, and it is here, too, where they bifurcate – Kortland propones the parasitic, and Van Driem – the mutualist interpretation of the theory. Language is a mutualist and impervious to the host, argues Van Driem, where its constellations of meanings might be wholesome, indifferent or debilitating to the same host, mostly depending on their mode of transmission – vertical, and largely benevolent, or horizontal, and largely malevolent (Ibid.: 12-14).

Analogously, one could argue, there is a similar power distribution in music – sounds are music's building blocks, each bestowed with a specific meaning-as-signification, as far as sounds – like words – are signs in Saussurean sense. When several tones liaise in their various ways of forming relationships of horizontal and vertical structures resulting in a motive, (a series of) chords processions, a phrase etc., an idea may be formed by the host (the musicker), idea that corresponds to meaning-as-significance. However, in the sense of Leiden school, music is not a language. Van Driem describes it as either "paralinguistic" or "post-linguistic" phenomena, emerging at the Upper Paleolithic horizon – time when language acquired a level of sophistication that neurologically prepared human brain for the emergence of arts and religions. There is an important caveat Van Driem makes in defining music. Noting *en passant* that Rousseau was wrong in assuming language emerged from music, Van Driem goes on asserting, "As opposed to the 'music' of other species, music in man is a para-linguistic mimetic phenomenon, which arose in the neurological environment of linguistically mediated thought" (Van Driem 2001:57). In other words, Van Driem considers musical forms mimetic and not memetic phenomena, the great difference between these forms being i) the "fecundity and fidelity of transmission," working in favor of the latter, and, ii) by the fact that memes travel in clusters – the nebulae, meaning as significance arises from. Upon accepting the 'mimetic' as its label, music automatically dispossesses itself from any claims on meaning as significance it may have. Finally, Van Driem does not consider the music of other species the same 'kind' as the music of man.

The theory of Van Driem is really appealing in making case for language as a mutualistic virus, that is, as a living organism. It would have been really convenient and not incredibly difficult, following the language template, to make a similar argument for music. Alas, Van

Driem's theory does not leave room for such ideas, as music here is conditioned by language. Indeed, language and music do have a history. For long, perhaps not without reason, they have been researched separately. Obviously, here Van Driem sides with one of the two classical 'origin' hypotheses that regard the two phenomena as essentially different, namely, the language-first hypothesis. Up until recently this approach was supported by neuroscience on the basis of brain lateralization in processing music and language – speech was thought to be localized in the left and music – in the right hemisphere (e.g. Bever and Chiarello 1974). Conversely, there also is the (more popular) music-first hypothesis, proposing music as a sort of a proto-language of expression and emotion, from which only later 'language' and 'music' furcated (Rousseau). Within cognitive musicology there is a further division – the 'adaptationists' who maintain that music played a key role in human's survival (Huron 2001), and 'non-adaptationists' regarding music as a cultural construct with social functions (Patel 2010[98]) – a dichotomy that is in essence just another octave of the old nature/nurture opposition. Interestingly, recent research suggests that as far as the brain is concerned, music and speech might be closer relatives than previously thought – in an article titled "The Relationship between Music and Language" the University of Zurich's Lutz Jäncke compiles relevant scientific data, discussing the interconnectedness of speech and music structures. Special consideration receive the possible impact of (the) music(al) on auditory training (Gordon et al. 2011), on phonetic perception (Ott et al. 2011), and on syntactic and semantic processing (Hoch et al. 2011 in Jäncke 2012). These studies suggest that music is more deeply implicated in language production than previously thought; a robust study from 2018 even asserts that piano training improves sound processing and general language development more than reading does (Y Nan 2018).[99]

Cognitive scientists' research on the narrowing gap between music and language develops alongside humanities-based interdisciplinary projects, which, too, have approached the

[98] For a summary of the problems of music and evolution scientists wrestle with see Patel 2010 pp. 367-401.

[99] It is worth mentioning here, if only in passing, the relevant work of literature professor and psychiatrist Iain McGilchrist on the divided brain, *The Master and His Emissary* from 2009. The author makes a compelling case for music being older the language: he compares the dynamics between music and language to those observed between the right and left hemisphere – where the former is older, exploratory, holistic, more informed, aware and reliable, the latter is like a "high functioning bureaucrat" (McGilchrist 2018), interested in stability, code, things, parts, directions, references, actions. The potential, the vast array of possibilities of the right hemisphere/music, the left/language constrains and constrains, and constrains, until it brings all possibilities down to an actuality.

music-and-language, and particularly the origin-of-music, problems in a more holistic spirit. The buzz word in the new, post either/or era, is pluralism, requiring contributions from an array of disciplines in the scientific investigation of music, a pluralism that will "construct integrated models, which take into account the dynamic interaction between different aspects of music" (Currie and Killin 2016). An example of pluralistic approach is presented in *A Million Years of Music* (2015) of music historian Gary Tomlinson, where the author converges accumulated knowledge from the fields of "archaeology, paleoanthropology, and human evolutionary studies on one hand and music cognition and music psychology on the other. (Other fields also have much to contribute: ethology and primatology, linguistics, semiotics, and more.)" (Tomlinson 2015: preface). The resulting major insight of such a large scope interdisciplinary work is the proposal that music and language coevolve in a biocultural coevolution.

"Language and music did not develop," writes Tomlinson,

> Instead they fell out, as belated emergencies, from patterns of sociality and communication, neither musical nor linguistic that can be traced to periods long before Homo sapiens existed (Tomlinson 2015, preface).

"Half a million years ago there was not language nor musicking" (Ibid.: 127), assures us the author. The prehistorical means of communication, imaginatively dubbed by Steven Brown 'musilanguage' (Brown 2000), Tomlinson carefully names protodiscourse – a maneuver designed to avoid any music-first biases. The protodiscourse entrains hominins, non-human species and other organisms and their environments in dynamic, intersubjective feedback and feedforward cycles of mutual inoculation. The musical and linguistic behaviors evolved together, integrating and mediating into their ecologies physical gesture and vocal utterances; they developed together with humans' cognition, but also with their environments and technologies forming a dynamic system, always increasing in complexity and combinatorial potential.

Hierarchies

To summarize Tomlinson's hypothesis on the biocultural coevolution of language and music: both phenomena emerged within and later differentiated from the hyperlinked polysensory protodiscourse, like trees from a rhizome. If, then, this protodiscourse is neither language nor music based, what would be at its core, the glue that holds it together, the kernel of music and language?

Gary Tomlinson suggests, hierarchies. Without the cognitive capacity for hierarchization in place, none of the complex social systems and structures could have existed, claims the author (2015: 18). The hierarchy-laden premise of music and language is the foundation of the protodiscourse out of which human cognition has emerged. And perhaps not only human cognition. After all, dominance hierarchies are more than 300 million years old, older than trees, conjectures University of Toronto's psychologist Jordan Peterson – it is perhaps the deepest universal principle of organization known to us. A yet deeper principle, I should add, is the binary base of reality – to be vs. not to be. Dominance hierarchies or the principle of unequal distribution (known as the Pareto distribution principle) applies not only to people's or even living beings' social systems, but also to galaxies, to the population of cities or the frequencies of words in a language (Peterson 2018: 9). Peterson considers dominance hierarchies "an essentially permanent feature of the environment to which all complex life has adapted" (ibid: 11).[100]

If this organizing principle is thus deeply seated and if it applies to such diverse array of structures and phenomena, language and music included, we could reasonably deduce that it is, 1) universal, and 2) fractal. Another way to conceptualize this universal fractal hierarchical principle is offered by ethnobotanist and philosopher Terence McKenna: recognizing the invisible architecture 'behind' reality, he names it syntactical organization ("The Valley of Novelty" lectures 1998). Expanded from its conventional meaning of rules governing the grammar of a spoken language, McKenna's 'syntax' and 'syntactical intent' are defined as the rules that govern behavior of any complex system, rules woven in the epigenetic transfer of information. For him, spoken language might be indeed 40 000 years old, as linguists tell us, but it is unthinkable to imagine that our predecessors who discovered fire half a million years ago did not have a language. Although McKenna specifies (aligning with Tomlinson) that the hominin protodiscourse was gesture-based, he insists to calling it a language speculating that the early hominins had perhaps a gestural vocabulary as complex as standard English, millions of years in formation (Ibid.).

In so many words, the idea of dominance hierarchy or a syntax underlining reality both agree with Campbell's proposition of a rule set governing our PMR. Each single phenomenon in our phenomenal reality – language, music, you et al. – is a product of a double articulation: on the one hand we have the rule set of constraints and possibilities as a diagram of

[100] It is important that hierarchy is not equated with power or even with economic status. For the crucial distinction between these terms and also on the nature of hierarchy as opposed to equality see Louis Dumont *Homo Hierarchicus* 1966.

suggestions for becoming, and on the other – the relentless process of evolution exploring everything that could be and promoting anything that works. In this model, a protodiscourse emerges, one made of gestural, vocal, or more generally cultural units of epigenetic syntactical transmission; it works for millennia satisfying the communication, entertainment, cooperation and survival needs of the ancestral community. This discourse between our ancestors and their *Umwelt* acquires a previously unachieved level of sophistication around 60 - 40 000 years ago, at the height of the Upper Paleolithic horizon, when a memetic revolution occurs, "whereby new types of memes arose in the form of words to denote non-physical entities which exist primarily in the human imagination" (Van Driem 2001: 110). Language, at that time, has achieved a degree of development and refinement, which makes it the perfect "vector for the epidemic spread of religious and artistic thought," hypothesizes Van Driem (Ibid.).

Has music evolved riding on the language vector? Many claim the opposite is true. If we regard them side by side, we may conjecture that in their evolutionary process, music and language act as closely related species. If language is conceptualized as a mutualistic symbiont, what can we make of music, if it, too,

- has evolved together with human beings, their technologies and their memetic revolutions;
- has enriched and expanded the conceptual, emotional and cognitive universe of the hosts, while the hosts have propagated music elevating it from a pass-time activity to a universal behavior across the entire species;
- is a non-constructible set,
- has spearheaded the "epidemic spread of religious and artistic thought,"
- has hierarchical and syntactical basis,
- could be representational[101] (i.e. of movement patterns or nature sounds),

… and it is at least as much as language, if not more, made of meaning, although it tends to be rather private about its precise contents. Indeed, it seems that language and music are not so much different, as they have different goals, reflected in the "hierarchical structures of action planning:"

> [T]he hierarchical structures of music arise to achieve goals with a strong relation to the affective-gestural system encoding tension-relaxation patterns as well as socio-

[101] On the point of musical representation a discussion follows towards the end of this chapter.

> intentional system, whereas hierarchical structures in language are embedded in a conceptual system that gives rise to compositional meaning (Asano & Boeckx 2015).

Different goals imply different desires and, hence, different modes of becoming. From the same ingredients – air-mediated vibrations – speech and music create different dimensions. As a collective, polyvocal assemblage invested in exploring and proliferating, music performs the nonconscious and renders it perceivable, the nonsonorous forces music makes audible (Deleuze and Guattari 2013: 111). Music creates affect, it hints and suggests, it modulates engagement. Language, in contrast, is a production-oriented, high-functioning, code-writing and code-abiding workaholic. From the murmur of music language draws to shape and craft things, to make the world of things visible to our self-consciousness. "From the murmur I take my proper name" (Ibid.: 98). Language gives proper names to phenomena for our convenience, but the latter comes at a price: as Deleuze and Guattari put it, language is made of order-words: it transmits them to compel obedience (Ibid.: 88-89). Further, where language is sense-driven, music is sensibility and sensuality-ridden; where language must be learned, music asks to be let in; where language creates new knowledge and concepts in order to expand our, shackled to it, consciousness, in music we must forget all we know and all we are, in order to hear. . .. These different desires and different becomings of music and language are reflected in their respective distribution and propagation – where writing was invented circa 4000 BC and since only grows stronger, notation appears 2000 years later, but achieves a working level of sophistication only less than a 1000 years ago.[102] Even today, reading music is an exotic hobby and writing music remains a high-brow activity, while only 17 % of world population remains linguistically illiterate (Roser 2018). Language is the vector of Sapiens's expansion, ascent and subjugation of cousins – closely related or more distant ones. Music, in contrast to the people-biased language, is fair and inclusive of all that has a place on the continuum of life. And that is pretty much every-body. As plant neurologist Stefano Mancuso asserts, "We exist on a continuum with the acacia, the radish, and the bacterium" (in Pollan 2013). In terms of music, we could say that we musick in a continuum with the five thousand species of songbirds, the cricket, the whale, and the silvery gibbon – we develop the same diagram, each according to her unique becoming and within her unique constraints, i.e. with the specific amount of information filtered through the species' data set.

[102] As Van der Meer has pointed out (to me, in personal communication, April 2020), in the middle of the 7th century, Saint Isidore of Seville wrote a twenty-book encyclopedia, in the respective chapter of which is stated that melodies could not be written down – hence the lack of musical notation in this important opus. . ..

Either way, 'music' is the same music in humans and non-humans – a sound factory for integrating paralinguistic meaning. And we have only scratched the surface of its potential. Elaborating on the specifics of the Hindustani rāga, his major object of research, the Dutch musicologist Wim van der Meer asserts that "even the total set of formulae in a rāga would not comprise the total body of the rāga" (2008: 29). As language is not simply comprised by words and grammar, but of all possibilities of thought and expression within it, so in rāga "Any way in which formulae are combined, recombined, modified, adapted, extended and transformed is part of the body of the rāga" (Ibid.), continues Van der Meer and concludes that rāga is a non-constructible set, "a seemingly infinite and indefinable collection within which musicians make selections and choices, in which the artist traces his own path and pursues his own goals (Ibid. 29). On the basis of the fractal principle inlaid in the evolution of anything-becoming, we could extend Van der Meer's elaborations on the rāga and apply them to music in general. All specific articulations, organizations and iterations of the diagram in all known formulae and vectors of becoming do not exhaust the potential inherent in the idea of music manifesting aspects of itself through different hosts.

Could we regard music as mutualist symbiont? My answer is yes. In fact, Van der Meer has already proposed so himself, when, referring to Van Driem, he states:

> I suggest that evidence is becoming increasingly stronger that music can be considered as an organism that lives in symbiosis with its human host, in a similar way as language does (Meer 2008: 32).

Even if the notion of the organism might not quite suit the idea of Musika, the big idea of Van der Meer is congruent with the propositions made here. It is even tenable to ascertain that, unlike language, musical forms are rarely malevolent, or at least less so on a mass scale.

While we shall return to the topics of language and music (and rāga), now we move attention toward the question of the strategies music employs as symbiont, in order to seduce its hosts.

Musinkulus: how to make a virtual person

Both music and language, as sound organizing phenomena, begin their becomings in Musika. Naturally, in the reality frame of sound evolution, Musika reality frame (MRF), not everything is music or language. 'Music,' in fact, comprises a miniscule part of Musika's evolving creaturedom. In MRF there are intensities with heterogeneous potentials, homogenized to an extent only by the nature of their medium, sound (as distinct from the

media of thought or biological tissue, for example). In Musika's chaosmos, to borrow from Joyce, all there is, is what Deleuze and Guattari might name ecstasies, as in "Chaos is not without its own directional components, which are its ecstasies" (ATP: 364). With time and interaction, these sonic ecstasies may be thought to develop a personality signature, what we may apprise as a character of sound: whispers, whooshes, whirrs, whines, wizzes, whistles, whimpers, noises, screeches, squeaks, screams, sobs, sighs, songs, speeches, cries, quacks, meows, barks, tweets, moans, groans, grunts, growls, giggles, laughter etc. etc., representing a tiny portion of all potential types of MRF. The ecstasies, vibrating with their sonic signatures, are interacting and intermingling in milieus and environments, combining and arranging themselves against other in variety of forms, organizing content and developing Musika's potential. This structural side of the project develops amidst dynamic tensions represented by organizing propensities, such as intonation, prosody, dynamics, alliteration, rhymes, inflections, modulation, accentuation, pronunciations, harmonies, imitations, amplitudes. . ..

This 'country of music' is not without a resemblance to Physical Reality Frame (PMR). For one, sound, as a medium of the Absolute unbounded manifold's consciousness energy, itself needs a medium – we know that at least in our PMR sound becomes through gas, liquid, and solid, and that it has working relationships with vacuum and plasma; furthermore, different solids convey a striking variety of sounds. We also know that sound is responsive to temperature, pressure, even salinity – different conditions and different environment not only affect but determine the quality of the sound. To be logically consistent, then, we may surmise that in Musika's realm the sound itself enjoys a much wider working range than it has in PMR – it is known that humans hearing ranges between 20 Hz and 20 kHz, a range quite wide compared to the chicken's (approximately 125 Hz to 2 kHz), for example, but perhaps a tiny fraction of what beings that are built of 'sound molecules' can perceive. We can, therefore, conjecture with some confidence that Musika's scape includes regions of vastly different topographic quality, providing a variety of fertile ecologies for sonic evolution. Each different environment encourages development of certain characteristics and discourages others – thus we can talk of sonic kinds, types, or why not species.

Being not of physical nature the way sentient beings of Physical Reality Frame are, the sonic entities enjoy freedoms and capacities nonexistent here, as Musika Reality Frame likely is, one should think, quite different than what we can envision. But perhaps not that different – let us recall that the Absolute unbounded manifold is guided by a fractal evolutionary process based on repetitive patterns: "Consciousness does not evolve in a thousand different

independent ways; it evolves in the same way in a thousand different forms at various levels of interdependence" (Campbell 2007: 450). It is logical, then, to assume that there might indeed be resemblances between the organization of sentient creatures and that of Musika, enough so that the latter would be interested to expand into and accelerate its evolution through a symbiotic project tailored to fit PMR sentients' various levels of consciousness.

These are resemblances of design: a musical entity and a sentient entity have a lot in common. The single sound sustained out of the chaosmic vibratory dance of sonic ecstasies is like the single living cell. The repetition of the sound is like a cell division. The variation of the sound – sound ■ followed by sound ▄ – corresponds to the differentiation of organ systems. And when sounds vibrate and resonate simultaneously, they form a complex ensemble akin to a living body. Further, the organization of the music flow in phrases emerges out of PMR-specific constraints that have to do with vertebrates' respiratory system, with breathing; the homogenous pulsation at the basis of music mimics our heartbeat, representing what it is like to be (biologically) alive. . .. Many have written on the somatic blueprints of musical gestures (Levi-Strauss' *Mythologiques* 1964, Blacking's *How Musical is Man?* 1974, Barthes *The Responsibility of Forms* 1985, Changizi *Harnessed* 2011). Indeed, the perceived correspondences between musical and physical movement stem from their common ancestor, rhythm. In an article from 1993, Richard Middleton resuscitates the work of the Hungarian musicologist János Maróthy, to convincingly outline the fundamental role of rhythm as the marrow of both musical and physical structures: " [of] phraseology; chord and textural change; patterns of accent and intensity, of vocal 'breathing,' of vibrato and sustain; not to mention the micro-rhythms responsible for the inner life of sounds themselves, and the quasi-'spatial' rhythms organizing the hierarchies of relative pitch strength and tonal tension, both on melodic contour and harmonic sequences:"

> Maróthy has eloquently described the permeation of the whole spectrum of musical parameters (...) by rhythmic principles. The physical spectrum of periodicity zones (lungs – heart – feet – fingers – speech organs – vocal chords – ear drum – ultra-sound perception – electro-chemical neural circuits – eye [light waves]) is mapped ... by the musical spectrum covered by the frequency zones of rhythm ... and pitch, which together cover the distance from pulsations occupying several seconds each up to a frequency of approximately 20 000 pulsations per second. This gives a theoretical basis of the idea that 'gesture' occupies a spectrum with relationships to obvious corporeal movement at one end and neural pulsations at the other. Not only the beat and meter, then, but also the micro-physics of intonation, sound-articulation

> and timbral adjustment: both are parts of the *rhythmic ensemble* (Middleton 1993: 179, emphasis mine).

If rhythm is understood as the "repetition of any element whereby heterogeneity can be made coherent" (Maróthy, in Middleton 1993: 178), then we can appreciate rhythm as the very glue of meaning-making, and also of shared meaning, as far as coherence (from Latin *co-haerere* – to stick together) denotes "systematic or logical connection or consistency, integration" (*Merriam-Webster collegiate dictionary*), and also "the quality of forming unified whole" (*Oxford dictionary of English*). In this respect, rhythm is Bohm's "tacit ground" that holds society together and from where thought emerges – he uses the word 'coherence' to describe the desired binding effect of the shared meaning society is based on (Bohm 1996). It is obvious that music is made of rhythm and pattern, but so is the human being: "To be a human being is to participate in a certain pattern of being, that is acted out socially, individually, but is also part of your structure, even of your perceptual structure as a living organism of your particular type," proposes Jordan Peterson, recalling Jung and his concept of the archetype (Peterson 2017 II, at 1:17:16).

Out of rhythm and pattern, the tacit ground of creation and meaning-making – and we can argue, of protodiscourses and of hierarchies as well – the human being is made. Beside the 'auditory homunculus' (Changizi 2008) as 'someone' who automatically translates our auditory input in terms that make sense to our million-year-old survival and adaptation instincts, we also have a visual homunculus, and also an emotional, and a cognitive one. In a way, we are made of innumerable, different parts that must come together to create a resonance between themselves and with the outside world, a rhythmic ensemble integrated and coherent, like a song. Thus, is our personality created. Remarkably, to cite again Peterson, "It is not obvious that your personality is insight you. Is your child more a part of you than your arm? A person is made out of sub-components none of which you can see when you look at a person, all the complicated machinery inside you that makes you who you are… Outside of that, you are nested in all sorts of complex systems, family, society, state, ecosystem… [To] make a distinction between yourself and the systems that you are embedded into is very difficult" (Peterson 2017 I at 26:10).

The complex way we are assembled together by integrated systems of homunculi in a un/perceivable whole is the way we make music. Humans are genetically and epigenetically conditioned to receive and produce sound as part of their biophysical makeup – although it took hundreds of millennia to figure out how to produce color, the spastic early hominins

have always known their bodies make a variety of sounds. Simple bipedal creatures whose survival depends on a timely hearing of that which is hiding from sight, people pour in sound-making the abstracted knowledge they acquire from their observations – of people and animal movement, of wind and trees. From the vast and vastly nonconscious collection of rhythmical ensemble's extensions, like heartbeat, walk, run, affective and kinetic physical gesture – perhaps even qualia inasmuch as the micro-physics of corporeality and perception is rhythm-derived – we select a bunch and transpose these onto sound as material, to create a Musinculus. A multidimensional creature, the Musinculus – which we call music – closely resembles the malleable human being but is even more flexible than her: dimensions could be added or taken without any apparent danger of destroying Musinculus' body. Different elements, like fairy godmothers, gift the creature their spatiotemporal superpowers:

Melody gives it length,
Harmony gives it mass,
Dynamic is its depth, and
Texture – its volume,
Tempo determines its gait,
Size (length of the piece) – its alleged place in a social hierarchy?
Modes determine its character and behavior,
Major and minor supply it with attributes corresponding to human genders,
Instruments filter and amplify the sound vibration through different applications – like speciation or race? . . .

. . . We know no limits in refining and texturizing the Musinculus. No wonder it has gotten under our skin to claim a 'real' relationship. That which began as a casual and fun affair - poking the musinculus like a rough voodoo doll while banging, beating, hammering on the drum away from the human body, all too soon progressed into embracing and stroking it via the application of strings, breathing together and holding it through the wind instruments and it was inevitable that humans and Musinculus will eventually become one – the voice, human's being and feeling, she wholeheartedly shares with this other creature. It is no surprise that the Musinculus slowly takes on a life of its own. To us, its creators, it is unbelievably mysterious and unsettling why and how the creature affects us so. The Musinculus too, seems to like humans, for it continues to hang out and to evolve with them. Caught in a symbiotic becoming, these two life forms begin a process of mutual inoculation, imbibing and experimenting, where humans encourage music to becoming-physical and even to becoming-man while do their utmost to proliferate and propagate it, and music teases always novel modes of musical beings and becomings out of humans while it contributes to the expansion of their capacities, abilities and sensitivities.

In short, people love to play with music. And music reciprocates.

III INTERVAL

Strange

But there is strangeness to people's relationship with music.

I mean, music is not a real entity, right? Yet, on a mass scale we act as if it is. We build opulent places of music worship with an utmost attention to the idiosyncrasies of music's medium, sound – concert halls, opera houses, discotheques, clubs. And we go to these music venues 1) to meet music and its shamans, and 2) to maybe see our friends, while the order perhaps should be reversed were we more loyal to our conspecifics – in which case we would have built halls for friendship worship with maybe music in the background. But we know: friends are expendable variable, music is for life.

It is also strange to consider the lengths we go in our commitment to music. To become a musician, for example, one sacrifices play, pleasure, parentage. To hearken a song, to sing in a choir, to go to a concert, to play in an orchestra, to write a book on music – though of different order and scale, these all are sincere offerings to music, offerings of humans' most precious commodities – time and energy.

Furthermore, we are eager to personally try any adapt to any-thinkable-thing that might please music and that might tease another color out of it: devising ever-new instruments, for example, or inventing technologies that create musical industries and provide people's life with sustenance and meaning. Or, modifying our voice – the human voice was not necessarily meant to sing opera, to yodel, to experiment with registers and diapason defying the 'laws of nature,' like the Tuvan singing does, to sounding out together with the sounding out of another person (how playful! how weird!), or even through another person's mouth cavity like the Innuit's throat singing. Yes, Spinoza, we really don't know what a body is capable of! And even these bold experimentations fall under the rubric 'Miscellaneous' when compared with the abhorrent transgression to our biological foundations, which sacrifices family and progeny in the name of music – for how otherwise to describe and fathom the phenomenon called *castrati*?

Such dedication could only sprout out of the feelings of ease and affection, of the relief obtained from the complete lack of boundaries, I would dare say, from the culture of

unconditional trust that characterizes people's affair with music. Which cannot be stated with the same certainty regarding Sapiens' liaisons with other species or even with each other. For example, although humans have selectively bred animals for thousands of years, it is only 45 years ago, in 1973, that they were able to crack the DNA code and to begin modifying the genes of plants, animals and microorganisms, and it is only two decades ago, in 1996, since the first creature, Dolly the sheep, was successfully cloned. Genetic modification and cloning are still very sensitive topics of large-scale public debates, and subjects of difficult reasoning and ethical upset. In contrast, with regards to music we set no limits to our imagination and agency, and experiment lustily, ethics-free, with its space-and-time, pitches and harmonics, rhythms and meters, genres and styles, systems of organization and sound-producing technologies – we mix and remix, arrange, re-arrange, disarrange and counter-arrange, dabble and tinker with musical materials and expressions to our heart's delight. And we always have. Scrupulous and squeamish when it comes to experimenting on animals, even for the sake of science's quest for 'bettering the human condition,' we have no laws or even principles forbidding unnatural, abominable and appalling musical practices, i.e. the elevator music, karaoke or the 'cancerous meme music,' of appearing, persisting, and polluting the auditory space. Perhaps only the fear of exposing to ridicule our bad taste could reduce or limit our musical trespasses.

But not our enjoyments of them, for we find even dubious matter like cloning exciting and fascinating when music is involved (apart from music industry's iron grip on copy rights). A music work like Chopin's Nocturne in D flat major op.27 no.2, for example, persists in becoming in rooms, halls and studios long after its creator's demise; moreover, we sometimes spend hours listening to and comparing dozens of performances of the work by different pianists of different ages, hoping to find something, the one rendition that rings true to our vision of the work, the one that holds its password. Do not performances of the same music work correspond to people's different ages? Like the human face and body, so different in its 1920s, 1950s or 1980s, we could feel mature or restless, poetic or exuberant Nocturne in Arthur Rubinstein, Rado Lupu, Brigitte Engerer or Eric Lu's interpretations. Well, it is to be noted that gender and age are human, not music constraints: a music piece's *becoming* is nonlinear, trying different age-like and gender-like guises, different temperaments, moods and ideologies. Cloning music is not only guilt-free, it is an all-engulfing, enlightening, informing, and fun experience that is anticipated with curiosity and received with amazement and joy.

Joy, unless it is the music of other people – then it is hell.[103] We carefully select our music according to our needs, moods and culture. Dr. Music is our go-to practitioner in rain and shine. But then, of course, there is the other kinds of music, which we have not chosen and therefore consider intruding, aggressive, hostile, BAD. Vulgar, stupid, unworthy, irritating, awful, unbearable – other people's music should be forbidden, today! "Isn't music also disorder, disturbance, destructuring of an overly constructed and polite (polished) world?" asks Michel Serres. Yes, it is. On the one hand music sooths, inspires, and motivates the conscious while organizing the unconscious, fragmentary content of our mind. But on the other – it destratifies and unsettles stagnated structures, stirs quiet waters, blurs the contours of the world that appears the best of all possible worlds, ever so dainty and polished. A smooth operator, music accomplishes a balancing act of a tuner between self and world.

"All arts constantly aspire to the condition of music," famously noted Walter Pater. And not only arts, one should think. The integration of form and content so effortlessly showcased by music is the grand project of the human being too: how to achieve an agreement and integrate the given (what is received by birth as genetic predispositions and also the specific circumstances of your lot, like birth place, parents, country, status) with the right form of life (all *moments* of your becoming, actions you take and choices you make in the pursue of meaning and a worthy life in conjunction with world's patterns)? How to bring all levels of reality so that they are in harmonious relationship with one another, in a perfect alignment – this is the fundamental lesson a symphony teaches us, declares Jordan Peterson who defines music as a 'model for proper being'. And the question of the musical being is ontological, too. With the same breath of ours that is imbibed with existential angst, fear of death and doubt of our im/material nature, we vaunt and praise the immortality of a music piece. Aware that in music the rhythm and pattern of information survive their medium of transmission and traverse spacetime in a continuous variation, we struggle to see the deep, universal, fractal nature of this principle. It is this pattern that celebrates life taking lessons by death. While we understand and tacitly accept the spiritual nature of music, we deny it to our kind.

Indeed, compared to our Musinculus and to our relationship with it, we sentients appear to be not abstract enough.

[103] "Hell Is Other People's Music" is an essay by Momus (2006).