

An electronic orchestra as an ode to happiness

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Premise

1. Abstract

The particular research is inspired by the philosophical thinking that explores the relationship of man and death through the poetic short stories of cosmogony, which occupy the places of study of metaphysics and ontology. The focus of the research study is the thumic of the soul, where thumos is an ancient Greek word that means the whole of the emotions of the human soul[1]. As a result, the particular analysis of the term thumos generates the phenomenological study of the four movements of the human soul, which have been suggested by Plutarch and symbolize desire, delight, fear, and sadness[1]. The concept of thumos functions as a bridge that connects and separates the study of the emotions of human beings, to and from the scientific research of the necessity in the natural world. Thus, philosophy as an intermediary establishes the observation of the individual's spiritual movements within a cluster of morphogenetic laws.

2. Introduction

I follow Plutarch's significant example with regards to finding the paths of becoming that have the potential to lead to a harmonious relationship of the inner world with the outside world of human beings. Consequently, my primary focus is on the

thumoid functioning of emotions as the whole of the soul. My interest lies in the process that the soul could follow to remain in a macroscopically steady escalation of emotional expression, where individuals learn to curb the external forces that impose on human beings' daily actions. In order to succeed in fulfilling the events ode to happiness the course of the forces of the soul that move it proportionally to the union and separation of the imaginary from or with the physical reality, I would like to explore how and if it is possible to purify the human body internally. Thus, the goal is to design an audio-visual, tangible, therefore sensible network of the links that shape the stages towards euthymia, which is described by Plutarch as the learning process of the well-being of the whole of emotions[1].

Plutarch has claimed the ability of human beings to train their own and others' emotions[1]. Thus, in his letter to Pace, namely on euthymia, it is suggested that humans are capable of reining in the sensible world by using the wit as a precept formed through the study of significant examples[1]. Through paradigms humans are able to regard collective production of the states of human behaviour as a fundamental principle in the process of knowledge production.

3. The behaviour of thumos

Moreover, Plutarch suggested that the individual should learn from his or her example inspired by his own studying of the creative forces in human behaviour through the light of Empedocles's pre-Socratic philosophy[1]. Empedocles theorized human behaviour based on the phenomena that could describe the movements of the human soul following the logic of the constant interaction of cosmogenic forces[2]. According to Empedocles's belief that there is no birth or death has been developed the notion that exists today that the knowledge of the relationships of the four forms of material states, water, earth, air, and fire have an archetypal morphogenetic character[2]. Empedocles advocates that the strong ties of existence are moved continuously by two forces love and destruction as unifying and opposing agents who have always been and will be co-existent in the world's alternating circulars, affecting the universe and especially the human soul[2]. The relationships of the two forces as unfolded in Empedocles' philosophy describe the mathematical and physical concept of the tendency of bodies to appear ostensibly through the perpetual repetition of circular designs created by the need for agencies to co-operate, coexist and be opposed. Today, in the field of neuroscience, the philosophy of Empedocles describes precisely the functionality of the amygdaloid core of the human brain. In particular, in the neural networks of the amygdaloid core are primarily structured all the human emotions[2].

As a result, Plutarch's keys of well-being in combination with Empedocles study of primordial elements in their cyclical designation, structure the path of analysis of the soul. In this path, the soul has two fundamental forces, namely love and strife that move and mutate the human psyche in four dimensions, namely desire, delight, sadness, and fear, where the network of the individual ways shapes the complex behaviour of human beings. The individual

then needs to discover the intellect of his or her movements within the thumic (the whole of emotions) space that is activated by the carving of the feelings and ideas underlying it. Last but not least, the relation of the human soul and the human's biological nature invites him and her to consider natural phenomena in terms of the inner world structure. In the light of the tendency of unifying and disintegrating forces that are common in the populations of individuals, gradations of emotional events shape the behaviour of each individual expands and contracts through the states of interchangeability of the recipients and the attractors. And for this reason, today Empedocles is considered to be the first neuroscientist, for he has attempted to interpret the dispositions of the human soul in expressing them as a collective entity, namely the thumos[2]. Thus, Empedocles's attempt has been to analyse human behaviour in relation to natural phenomena, which participate in the creation of matter, in the view of cosmogony based on the four pre-Socratic principles of matter [2].

4. The phase space of euthymia

This research calls upon the metaphysical principle of the dialectical method to study the inner world of human beings through the ontological philosophy that studies the fundamental forces which determine the formation and the degrees of change of morphogenetic beings in the ranks of the organization set by the unifying principle of the power of becoming, that has been described in physics, by Poincare in his recurrence theorem, as the tendency of the states of all systems to reach their initial state. In order to examine the kinetic character of the soul that has the potential to reach a euthymic state of movement, Poincare's phase space provides the tools for undertaking the goal to develop a system for the examination of the possible combinations that take place in the four thumic states of the human psyche[3].

I believe that the analysis of the emotional world of the human soul is important because of the necessity of the soul to be represented through the bodies of heavenly and earthly beings that take part in a space of change, where the soul is invariable over time and the deterioration of time over bodies move in infinite dimensions, focusing on how the knowledge of the soul in the body is transformed through action and repetitive experience. In the philosophy of Empedocles, the function of the soul as an infinite entity unfolds within the actions of the individual's senses, in the expression and internalization of the emotions which are inseparably connected with the course of the logical necessity of the chemical reactions of small entities in the process of synthesizing materialistic reality. Thus, the treating of the human soul, as described by Empedocles, in the phase space of Poincare, takes place the treading of the intrinsic movements of the human soul for the actuality of the physical space. As a result, the exploration of the stages of the soul in the whole of emotions becomes analogous to the way in which probabilities are open to a dynamic system, where the various velocities of sadness, joy, desire, and pleasure unfold as a whole and are curiously revealing a real sense of the actual space's stability.

Poincare, a 20th-century mathematician, studies movement in the behaviour of the paths that structure a crystal[3]. In this example Poincare examines through the composition of individual parts of space the dimensions of all forms, proposing to study the speeds of changes taking place in a probability space, in which there is a tendency to create repetitive motion as points of matter in a dynamic coupling system[3].

This paper serves as the construction of the thumic network through the design of the system for the uptake and transfer of knowledge by examining the possibilities

arising from the links brought about by the movement of a few fundamental principles that are found in all the forms of the affection of the human soul. Therefore, the interrelated relationship of beings reflects the possible paths of the carving of emotions so that people can groom their lives through effective actions realizing their own example of participation as a member of a collective effort in which is possible in the harmonization of thinking within the living. Thus, within the treatment of the emotional states of human beings as topological references to the map that inscribes the change in emotions, the first step is to identify the relevant changes in emotions through their relationship with each other as parts of the whole, and in particular the possible states that human beings can find themselves in his interactions with other beings. Consequently, the question here is *what are the possible combinations that arise between the four intensive states of human emotions, namely, desire, delight, sadness, and fear?*

4.1. The movement of emotion as a dynamical system

In Plutarch's letter on Euthymia, a topological map was created for the understanding of the movement of the soul in four different forms, as a dynamical system[1]. In particular, the soul could move out when it was seeking a goal, it could move inside, when in fear, down when it was sad, and up when it was delighted[1]. Therefore, the structure of the network for the analysis of emotional interchangeability depends on the changes that embody the notion of significance through the distribution of emotions that each individual starts with and changes when in contact with another human being at one of the four possible states in different intensities that have four significant points in the trajectory of movement and change through closeness. Consequently, the soul can be

animated virtually through the representation of the movement of emotions with regards to the structuring of the thumos, the whole of emotions, as we experience them through the reflection of our gaining of knowledge on others and through the shared experiential space of becoming one's own self. The movement of the soul is then the representative character at each state. The factors that move the soul are two in number and are inseparable in every being, namely love and destruction. As a result, when the individuals are in fear, or desire, or are in delight, or in sadness there is a process that takes place internally, in order for each of these states of feeling to impose upon their actions and consequently to structure their decision making. Finally, knowing how one form of emotion changes into one of the other four forms and what their intensive differences are, lead to the second step of Poincare's topological methodology. Each emotional state is a finite point that is seeking for the shortest path towards euthymia, the well-being of the soul. In this particular path, the object is the soul that is driven by the coupling of the four degrees of freedom that are the significant finite points of deterministic behaviour, such as crying when we are sad, or imagining when we are desiring something that we do not currently possess, or hiding in the presence of a threat, or laughing loudly in a rapid expression of an ecstatic influence. Each of these manifestations of emotional stimuli alternate continuously in the long-term lives of human beings. The energy that fuels the emergent properties of the human psyche's flexibility is found in Empedocles's text on Nature in his notion of the Globe "Spherion" that negative and positive emotions are interchangeable and in order for the human soul to be attuned with the fact that the individuals live among populations of different beings with whom they interact, love has to prevail upon destruction in order for the successive

harmonization of the process of becoming [2].

With regards to the third step of structuring Poincare's phase space, in the thymic system and specifically in the networks that structure the state of euthymia, the euthymic state becomes a point in the space of the learning process of living well, where the singularities of emotional forms determine the spatial possibilities of the soul. Thus, the outcome of the simulation of the movement of the soul as it is being experienced in the influence of the person's interactions, thumos underlines the tendency of the change of emotions in a four dimensional space, such as in a cubic or spherical form that constantly seeks the best path for reaching its initial state, a pulsating movement that makes possible the irreducibility of the human soul, through the examples of others in which takes place the optimization and minimization in the basing for attraction.

5. Computational analysis of auto-kinesis

Inevitably, Poincare's phase space generates the conceptually captured manifestations of emotional intelligence in the graphically and sonically capturing of the virtual. Accordingly, Empedocles's notion of the Spherion opens up the discussion for an embodiment of emotional intelligence. Therefore, the scope of the next section underlines the methodology for the computational design of a positively asserted learning process of well-being with guide, Valentino Braitenberg's conceptual framework for the generation of hypothetical, self-operating machines[4]. The approaching methodology follows Braitenberg's example through Craig Reynold's paper with the title: *Steering Behaviours of Autonomous Characters, which in turn is understood by Plato's concept of auto-kinesis* [5] [6].

In Ancient Greece, the relationship between teacher and student was not understood as a relationship of superior and inferior, but as heterotic in the sense that the lovers become loved in a return to themselves. Thus, the hetero is the relationship that highlights the essence of philosophical pursuit in which the lover and the loved are equivalent factors in the common reduction and absorption of the soul in the imaginary field. The pursuit of knowledge and the pursuit of the soul, share the friendship of wisdom. According to Braitenberg, in his third vehicle named love, love is the attraction of the soul as the basing of moving of a kinetic being, from its exposure to environmental conditioning[4]. In order for the vehicle to love the source it needs to stand and reflect close to it. Hence, love is described as a relationship of closeness and slowing down in the vicinity of the source. Also, love is described as a turning away from the source, because it functions as a resource, which can be both amplified and reduced in the presence of the vehicle[4]. At the same time love is also destruction, because there are other sources that reduce the resources, which the vehicle tends to attack. Hence, in the example of the Love's vehicle, the four movements of the soul are described in the thumos of love, where the whole of emotions is described as one entity, love, which determines the action selection process of the vehicle. By comparison Braitenberg's Vehicle of Love approach of the kinetic properties of emotions is similar to Plutarch's notion of thumos.

For the purposes of realizing computationally the topological thinking of the whole of emotions the heterotic relationship of the escalation of the soul in four dimensions follows the three steps of designing auto-animated entities that can be found in the methodology for the designing of steering behaviors of autonomous characters as proposed by Craig Reynolds[5]. For Plato auto-kinesis is the combining of the hetero-kinetic

properties of the soul which structure the learning process of recognition, within patterns of flow of information that are repeated and can be understood better by example[6]. Hence, through hetero-kinesis the soul in a long-term exposure and personal growth succeeds the auto-kinesis and remains constantly attracted to learning, becomes curious about life itself.

5.1. Euthymia as process

The first choice in the design of the thumic system is the desire for euthymia, where the soul as an entity has the capacity to choose to move in four directions, in an emotional battle of the parts of the whole of emotions; as to find a repeated sequence of events in the phase space of intensive differences, where the changes in speed of the object, which in my case is the soul, are treated as the changes from the combinations of emotions that can be found in the example of Plutarch's topological movement of the soul[1].

Then the environment that emotional change is portrayed in is the interchangeable escalation between friendships and destructions, as described first by Empedocles in human behavior and in Braitenberg's self-operating machines. The ancient Greek infinitive *chairein*, which translates to I am happy, etymologically comes from the verb *chó*, which means spreading and the noun *chóros* that means space. As a result, the noun *chará*, happiness is understood as something that spreads throughout our psychic space and creates a broad intrinsic space for the individual. Finally, the infinitive of *chairein*, to be happy, is understood as being the soul. According to Plato, to this point the soul remembers its affinity with the idea, in its encounter with the Ideon man in which Zeus is born, the mind is born in the world of ideas and in order to achieve this final state needs to become auto-kinetic first, within the

catharsis of lives' passions as mentioned in Plutarch's letter on euthymia[1].

Thus, the steering behavior is embodied in the spherical relationship of philotis-friendship and neikos conflict, in a vector of love and strife that has a tendency for euthymic locomotion. Euthymia is apparent in the diffusion of instances that structure the escalations of the thumos with regards to the four privileged spaces of desire, sadness, fear, and delight. Eventually, there is no global plan for their movement but they move in populations of entities that carry pre-existing expressions for the emotional states of the soul, as those of the universe and thus emerge and decay, in a constant reshaping of their generative instances of successive recurrence.

5.2. The digital environment of the space of thumos

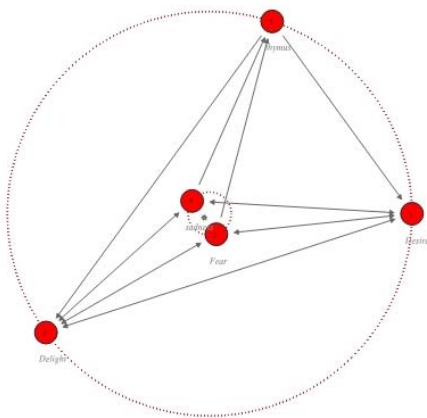


Figure 1: Diagram of the ten links in the synthesis of the movement of emotions in the thymic space

The computational model that I am proposing in this paper is a design of the unfolding of the emergent properties that are found in the auto-kinetic character of the human psyche in the exchange processes of the space of thumos, where

the knowledge that drives the sensible world shapes the behavior of human beings in his or her relationships with the path they are coming from and the possible combinations of the exchange of information in the change of velocity of each of the possible four hundred differentially intensive entities. A starting population of the four different forms of emotions starting with a low intensity that moves slowly in empty space, according to the direction of each emotional movement, namely desire, fear, delight, sadness. The maximum and minimum amount of intensities is normalized in a scale of 0 to 1, where there is a ten percent probability of each of the four elements to come in contact with all the different forms.

The differences of the level of intensity of each of the form depends on the kind of movement that characterizes its emotion. The creature of desire tends to move outwards, and is very expressive, since it is constantly seeking other entities. The creature of fear, tends to hide, to move inwards, and its movement leads to abrupt changes in its behavior. The creature of delight tends to move upwards, in relevantly high velocity and great concentration of intensity, and thus, seems to be attracted by lower intensities. If the concentration exceeds the maximum limit of delight's intensity, the creature of delight tends to move erratically and has the capacity to calm in the presence of sadness. Last, the creature of sadness tends to move in very slow velocities and it tries to turn away from delight, that in turn escalates the movement of sadness, lowering its gravitational resistance.

Moreover, the spreading of emotions is achieved by the relationship of closeness that arises by their points in space where the emotions meet and new entities are generated from the connections that return the initial intensity for each form. Through the remembering of previous generations from the links that take place

in an emotional spreading the generations try to combine the properties of all emotions in later generations, to make friends creating clusters of entities of all forms that move them in a cyclical way. This way, groups of entities create instances of a phenomenologically stable behavior that is relevant to the initial state of each form with a given intensity. This behavior is realized in the continuity of repetition of movement in a class of four different entities that change their velocity, in relation to their point in space and the point of the other entities that come in contact with at the same point. In the scope of friendship creation there are also clusters of aggression that are structured, when fear's and sadness's levels of concentration, if the synthesis of both intensities exceeds the level of the maximum limit of intensities of the synthesis of delight and desire. Hence, aggression is amplified by repressive forces and the avoiding tendency of the particular tie of emotions. The creatures start to deviate from their selves' movement from the center and outwards in a two-dimensional space where the edges are eliminated to the wrapping around of a four-dimensional sphere. The attractors are delight and desire whereas fear and sadness are the absorptions of delight's and desire's concentration.

5.3. The conceptual design of an orchestra of emotional beings in physical space

If we take this imaginary field to the sensible world, from the digital environment where the interactions of the parts shape the dynamical system of the

whole of emotions, to the embodied movement of mechanical multisensorial creatures, in which the interactions of the virtual emotions are attuned to the environmental conditions of a physical space, as a computational artist I would like to produce harmonised melodies of friendships and conflict, through different intensities of light that flows through a series of a population of kinetic sculptures in the dialectics of euthymia. At the same time, different sine frequencies that are filtered in low and high pass filters whilst in the filtering of intensities of the population of emotions in their interaction generate a myth, which is the harmonious synthesis of euthymia of life-like improvisational and sensitive creatures. As a result, the sonic environment of thumos is emancipated in a subtractive synthesis of the clusters of friendship and conflict, respectively.

6. Conclusion

To conclude, this paper has served as an exploration of the common areas of topological thinking in the combined realms of cosmogenic philosophy and computational science. In this research, my goal has been to incorporate the capacity of human beings to train their emotions when aligning with an imaginary field. I argue, then that the conceptual analysis inside the virtual world of computer software has a significant aesthetic potential that can be found in the deepest traces of human behavior and it is up to the prevailing of successive attractions in the abstract practices of emotional intelligence in generative art.

References

[1] Lathiris, Plutarch on Euthymia, Thessaloniki, iliodromio, 2014

[2] Baloyannis, Empedocles: Neurophilosophy and Neurosciences-

XXII Generative Art Conference - GA2019

Prophecy and Reality, Journal of
neurology & stroke, 2014, 1-6

[3] Teschl, Ordinary Differential Equations
and Dynamical Systems, city, American
Mathematical Society, 2012

[4] Breitenberg. Vehicles: Experiments in
Synthetic Psychology . Sabon, The

Massachussets Institute of Technology,
1984

[5] Reynolds, Steering Behaviours For
Autonomous Characters, California, Sony
Computer Entertainment America, 1989

[6] Nehamas, Woodruff, Plato: Phaedrus,
Indianapolis, Hackett Publishing Company
Inc., 1995