

**HOW CAN ARCHITECTURE BE COMPOSED AS FORM OF FROZEN MUSIC
- A FORM WHICH IS AFFECTIVE, GENERATIVE & ADAPTIVE**

A metaphysical approach looking into the quote “I call architecture frozen music” by Johann Wolfgang Von Goethe.

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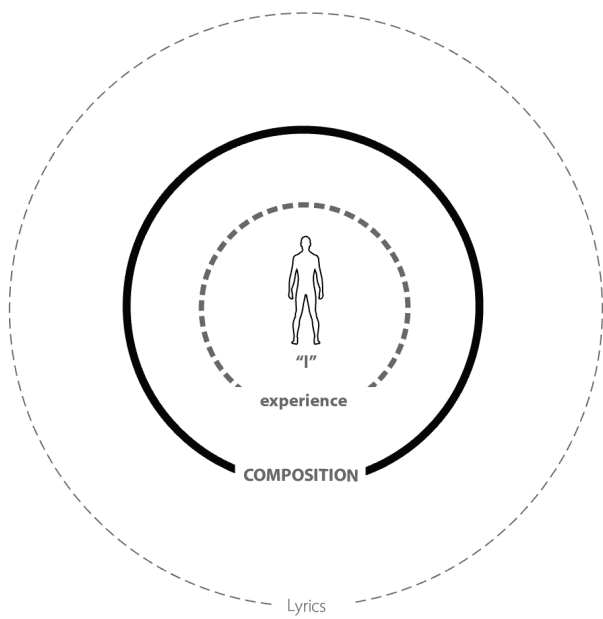
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BACKGROUND

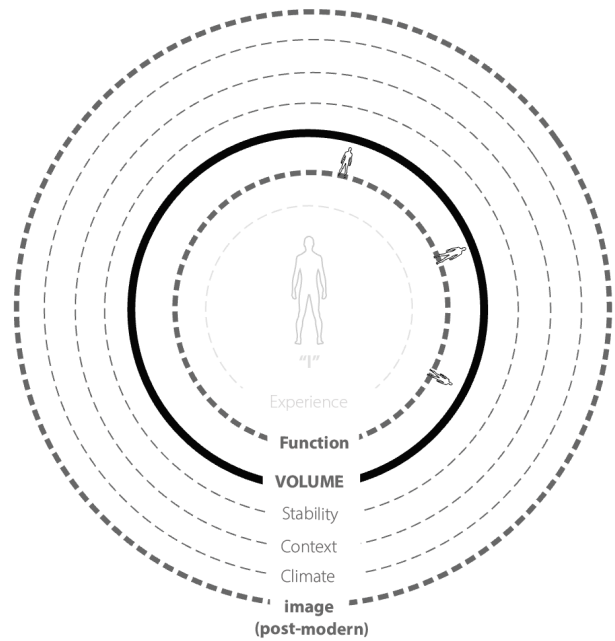
Feelings, emotion, atmosphere...are long treated as unexplainable, mysterious, as they cannot be well organised or controlled. With the rise of industrialization, modern society promotes on mechanical thinking, or linear logical thinking, effective progress. Feelings or emotions are sometimes regards as useless, or even a distraction. Some people tends to draw equivalence between “sensitive” to “fragile” in a negative way. In the contemporary time, culture is highly associated with economic activities, with their competitive nature underlining beneath, with quality associated with quantity, and with imageability and expendability as new directions.[1] Feelings or emotions fall in the pit of simplification or quantification, manipulated or packaged strategically for the sake of markets. The world tends to be defined by referential symbols, for examples, names, logos, brands...etc based on characteristics, which cannot explain the existence for a thing, not to mention the quality expressed. Under this world, people tends to adapt by shaping themselves into different ideal image defined by the world. Questions also arise like questioning about their existence, self-belonging in the world or even the meaning of life. Under these contexts, as human beings, I feel the urge to recall our awareness to our true feelings and re-approach the concept of authenticity.

1. H. Foster, *The Art-Architecture Complex* (Verso Books, 2013), p. 4

This diagram illustrates different factors (dotted line) on both architectural and musical bodies (solid line). Music body acts as the composition, which the people experience through, and have individual subjectively feelings. While in architectural case, mainly contemporary architecture, the body of architecture is mainly treated as an object, a volume, containing people inside with different activities. In some cases the volume is covered by or shaped according to external image. The architectural body is detached from the individual personal experience, disconnected from “I”. [1]



Music



Architecture

1. Christopher Alexander, *The Phenomenon of Life: An Essay on the Art of Building and the Nature of the Universe* (Berkeley, Calif.: Center for Environmental Structure, 2002), p. 16.

INTRODUCTION

I “hear” imaginative music from certain architecture, exactly as Frank Lloyd Wright put it - “When I see architecture that moves me, I hear music in my inner ear.” Reviewing on my previous design projects, I think that this imaginative music guides me instinctively to achieve certain building forms with good proportions. I “just know” that some forms will look more beautiful and are more emotional stirring. This phenomenon intrigues me and brings me further to the quote “ I call architecture frozen music” by Johann Wolfgang Von Goethe. Despite many interpretations throughout history on this statement, to me it is considered as an individual phenomenon of what Goethe observed or perceived about music and architecture. The mechanism contributing to this statement is the focus of the thesis. The research question would be:

How can architecture be composed as form of frozen music

It involves both the compositional structure of the work, and subjective effects they bring. The research is to ask not to ask how an architecture, an object, be created from certain musical piece, but how to created architecture works like music. The word “work” also suggests the research will be exploring not the object, but the mechanism behind the phenomenon.

Johann Gottfried Herder, a German philosopher and theologian, regards music as the highest of the arts because of its spirituality, which Herder linked to the invisibility of sound. [2] I understand it as immateriality. Music is an art with its dynamic form which is ever-changing. It is a form which is generative in nature, escaping from the domination of our eyes, and possessing affective quality to provoke personal feelings and emotions. The music form itself is also adaptive in nature. For example, a piece of classical music can be created in different styles like jazz or heavy metal. I believe that properties inherent in music form can be attained by certain architectural form.

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1. J.W. von Goethe, *Conversations with Goethe in the Last Years of His Life*, trans. by M. Fuller, *Specimens of Foreign Standard Literature* Vol. IV (Hilliard, Gray, and Company, 1839), p. 282.
 2. ‘Absolute music’, Wikipedia (2019) <https://en.wikipedia.org/wiki/Absolute_music> accessed 20 March 2019.

This drawing is drawn based on my imagination of how a music form is like. It is not only about drawing a form, but also manifesting the feeling I get from listening to music in general. The drawing is composed of strokes, which are not clear lines but with a gradual change of intensity. The whole form has the potential of growing, as long as I can add more strokes within the size of the paper.



POSITION

Many architects take approaches, particularly through notation to capture the form of the music by translating musical scores into architectural mapping. Some approaches end up too superficial or static. They end up making architecture that looks like music or something undefinable, but not work like music. The architecture are only in shape of a musical score, but not bear the effect inherent in music. Secondly, their approach may also work for one specific music in certain style, but not a general approach adoptable in other kind of music.

To compose a frozen music form, I believe that a new lens or model is needed. I am adopting a **metaphysical** approach. It concerns about the essence of the form. The first layer is to understand essence of the musical form. It is to ask why music is made, questioning the existence of music in relationship to human beings. It is also to ask how music is made, that means what contributes to the effect a piece of music possessing. The second layer questions on how to reconstruct this essence through architectural compositions, a composition involving materials.

The word "metaphysics" originates from a combination of two Greek words, literally meaning that "after or behind or among the [study of] the natural". It is the branch of philosophy questions and examines the fundamental nature of reality. It suggests coherent account of the structure of the world, through which people are can explain different phenomena in the world. The topics covered in metaphysics include existence, space and time, mind and matter, cause and effect...[1]

This research take the view from philosopher Gilles Deleuze, a French philosopher that "a philosopher is no longer to aim at finding a single, correct interpretation, but is instead to present a philosopher's attempt to grapple with the problematic nature of reality." [2] It is not about solving problems. For phenomena, they happen by nature. We can question on why certain things happen in certain way and suggests ways to perceive and articulate them.

"Wholeness" is the core belief underlying the whole fascination. Throughout the human history, people take different paths or lens to wonder about our world, and gradually develops into different fields of specialization like philosophy, science, mathematics... Different fields are paths or lens looking into the one whole world and they should not be isolating one from another. They are not frames claiming that certain parts of the world belongs to certain fields. I believe that different fields are complementary and among which covalence exist.

My belief is ensured by Gilles Deleuze's view that "[philosophy, art and science] are different ways of organizing the metaphysical flux, separate melodic lines in constant interplay with one another." [3] The word "interplay" suggests the three fields are co-existing and complementary to each other.

The research is not to make a dogmatic guideline to make and judge "good architecture" The main purpose of this research is to develop a "lens", or model, through which I can explain the subjective phenomenon to certain extent, and eventually develop an architectural language "Frozen music". The word "lens" is a metaphor, meaning a channel through which something can be seen or understood. The research also suggest possibilities through which architecture can be designed through an artistic lens, particularly music lens. Adopting the above perspective, I believe that beauty and poetic quality can be created in architecture.

Style of music is not a limitation to the research. The research will cover all the elemental parameters of the mechanisms. Different styles of music is only a matter of different interplays of parameters. As long as the parameters are understood, one can create different styles of "frozen music". The research is indeed an ambitious general lens which can be adapted to many situation.

1. 'Metaphysics', Wikipedia (2019) <<https://en.wikipedia.org/wiki/Metaphysics>> accessed 20 March 2019.
2. 'Gilles Deleuze', Wikipedia (2019) <https://en.wikipedia.org/wiki/Gilles_Deleuze> accessed 20 March 2019.
3. *ibid.*

APPROACH & DIRECTION



As the research is inspired by the quote “I call architecture frozen music” by Johann Wolfgang Von Goethe, a little study about his background is done. He was a German writer, with four major novels including epic and poetry works and numerous literary and scientific writings. His works were highly influential in 19th centuries. He also works on scientific studies like metamorphosis of plants, with a sophisticated view on homology and transformation. He treats universe as a dynamic and in constant flux and holds view that "art and science as compatible disciplines linked by common imaginative" and believes in "the unconscious impulses underlying mental creation in all forms." [1] His highlights of the idea "flux" and "impulses" also suggesting a more metaphysical approach looking into forms, instead of a structural organizing of objects.

I am taking mainly four reference sources, from mainly three fields - architecture, music and philosophy as inspiration to approach my topic:



- Juhani Pallasmaa's phenomenological view relating architecture, body and senses, with his book *The eyes of the skin - Architecture and the senses*.



- The book *The nature of Order - The phenomenon of life*, by Christopher Alexander. It addresses topics regarding the form of beauty, the nature of the universe and the art of building. The book is written with an assumption that everything is based on the real nature of human feeling.



- Ernst Kurth's *Music Theory*. He suggests *Musikpsychologie*, which is a more instinctive and intuitive approach dealing with music's structure and psychological phenomenon.



- The book *Deleuze on Music, Painting, and the Arts*, by Ronald Bogue, which provides an overview on how Deleuze approach music and art in a metaphysical way. One key word underlying the whole book is "flux". It helps on understanding mechanisms which explain different phenomenological views.

METHODOLOGY

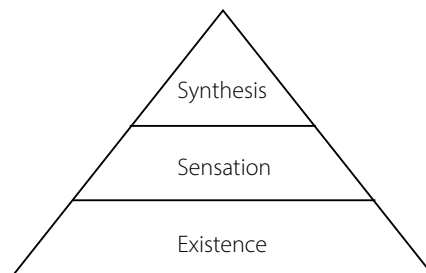
The methodologies of the thesis are mainly two.

The first one is to collect relevant literatures and examples, from mainly music, philosophy and architecture field. My role is to understanding fragmented pieces of literatures, clarifying and collecting concepts and vocabularies, according to my own interpretations and link them up to develop a coherent model.

The second one is to experimenting with sketches and illustrative diagrams, and even musical composition. Drawing relationships from different concepts require imaginative intuition and analogical thinking. The sketches mainly serve as a tool to brainstorm and visualize subjective ideas. The illustrative diagrams are more refined diagrams illustrating the concepts and mechanisms. They are being revised during the process of my thinking development.

RESEARCH STRUCTURE

The challenge of this research is that it is not only about collecting pieces of information which serves as design tools or references, but developing a coherent lens which is capable to explain the phenomenons. As the phenomenon is subjective in nature, it cannot be justified with objective data, but bases on concepts and views established by other people on similar paths throughout history. Secondly, the concepts interpreted and clarified in one part is essential in order to understand the following part, which builds on top of the previous parts. The research, is like a design development, which needs to be revised and modified to eventually become a chained, coherent structure. The research process, is indeed an exploration journey. I choose the word "chapter" to address different part as they needs to be read in order. The research structured in three sections - Existence, Sensation & Synthesis. More importantly, they are intertwined concepts.



MY EXPLORATION JOURNEY

Section I - Existence -

Chapter I

A glimpse of synesthesia
Origin of music
The idea of body
Body & architecture
World & immersiveness
Senses
Man-made body

Chapter II

Body & Membrane
Definitions of Time
Form & Time
Cycle
Frozen form
Experience as bodies interaction

Chapter III

Sound & Event
Auditory space
Positive & Negative space
Space & Wave
Energy, Force & Manifesto
Intensity
Flux & creation
Gravity in art
Systole & Diastole
Form & Spacetime

Section II - Sensation -

Chapter IV

Form & Sensation
Sign
Affect & Affection
Expression
Spontaneousness & Universalness
Reproductive process
Architecture & Expression
Empathy

Chapter V

Form, Matter & Memory
Immersive scenes
Architecture as theatrical making

Chapter VI

Quality of sound
Pitch as height level
Loudness as heaviness
Loudness as size
Variation of loudness
Deflection of flow
Flowing speed & hardness
Timbre as material texture
Light as flow
Flow & Porosity

Section III - Synthesis -

Chapter VII

Compose by Directing
Contrast
Order & Life
Wholeness

Chapter VIII

Rhythm

- Rhythm - deviation
- Rhythm - density

Tonality

- Tonality - mental stability
- Tonality - force between bodies
- Tonality - dynamicity
- Tonality in architecture

Chapter IX

Melody as stream of flow

- Monophony & Polyphony

Layering in music structure

- Layering as levels of scale
- Layering as theme development

Repetition & Changes

Generativeness & Adaptiveness

Choice of focus

Chapter X

Study - Water & Silence

Study - Erich Lindemann

Mental Health Centre

Section I
- Existence -

A GLIMPSE OF SYNESTHESIA

“When I see architecture that moves me, I hear music in my inner ear” this quote can be explained through a more formal concept - synesthesia. The word synesthesia, first suggested by philosopher John Locke, comes from the Ancient Greek σύν syn, “together”, and αἴσθησις aisthēsis, “sensation”. [1]

Synesthesia is a perceptual phenomenon in which stimulation of one sensory or cognitive pathway leads to automatic, involuntary experiences in a second sensory or cognitive pathway.
[2]

The research is not going to study the mechanism of synesthesia. However, importantly, synesthesia suggests that music is not necessarily depends on real sound. Music can exist in other form. And based on this, The research is not focus on acoustic effect, which involves perception of real sound in physical space. The research focus on the phenomenon that we hear imaginary music from experiencing architectural form through our eyes and touches.

Then, what is music?

ORIGIN OF MUSIC

The origin of the word "Music" comes from the Greek word "μουσική (mousikē; "art of the Muses"), whether the word "Muse" means "the inspirational goddesses of literature, science, and the arts. They are considered the source of the knowledge embodied in the poetry, lyric songs, and myths that were related orally for centuries in these ancient cultures." [1]

The origin suggests that music consists of abstract intuitive concept like God, poetry, myth. At time same time, conscious thinking is not isolated, but embodied in the creation. The beauty comes from its intertwined nature of science and art, between instinct and intellectual. Instinct and Intellectual are two pillars for music.

It is too abstract for the idea God. It needs to be understood in more concrete way.

THE IDEA OF BODY

Baruch Spinoza, a Dutch philosopher, draws relationship between the concept of God, the universe, mind and body, in his book Ethics, Demonstrated in Geometrical Order, published in 1677. I adopt his views as the starting position of my research.

In the first part, he does not treat God as the prime existence beyond the universe, but treating the natural happenings as the God. "Spinoza treats God and nature as indistinguishable, by knowing things as they are we improve our knowledge of God." [2] We human beings, always questioning the world from all perspective, science, mathematics, philosophy, art...Although people sense and perceive the world in specific directions, despite this, ultimate goal are the same. We human beings, are wondering about our universe.

The second part he focuses on human mind and body. He holds the points that the mind and body are distinct substances that can affect one another. "The whole of nature can be fully described in terms of thoughts or in terms of bodies, yet the mind cannot know its own thoughts better than it knows the ways in which its body is acted upon by other bodies." [3]

1. 'Music', Wikipedia (2019) <<https://en.wikipedia.org/wiki/Music>> accessed 20 March 2019.
2. 'Baruch Spinoza', Wikipedia (2019) <https://en.wikipedia.org/wiki/Baruch_Spinoza> accessed 20 March 2019.
3. Ibid.

BODY & ARCHITECTURE

The relationship between bodies and architecture can be drawn in the following paragraph from the book "body, memory and architecture" by Kent C. Bloomer and Charles W. Moore.

The interplay between the world of our bodies and the world of our dwelling places is always in flux. We make places that are an expression of our haptic experiences. Even as these experiences are generated by the places we have already created. Whether we are conscious or innocent of this process, our bodies and our movements are in constant dialogue with our buildings...This critical interaction of body form and movement with architecture deserves careful attention. [1]

It is understood from the paragraph that humans possess bodies, which are in constant dialogue with the world through flux. At the same time, our body is also in constant dialogue with our buildings. Human bodies, architecture, and the world are inter-related with the concepts of flux. The concept of flux will be further explained in the next section.

Haptic experience, which concerns touching, is also highlighted in the paragraph. Why is touching but not vision as the primary connection to the world? To understand this, in his book *The eye of the skin*, Pallasmaa quotes anthropologist Ashley Montagu's statement that "[The skin] is the oldest and the most sensitive of our organs, our first medium of communication...Touch is the parent of our eyes, ears, nose, and mouth. It is the sense which became differentiated into the others." [2] The skin I understand here is not necessarily the skin of our limbs, but can also be a membrane. For any sense organ, even the eye, there is a layer of membrane transforming the stimulations into nerve signals and transmitting the signals to the brain. Without that membrane, we can no longer sense anything from the world. The world only "exists" to the person who can sense.

1. Kent C. Bloomer and Charles W. Moore, *Body, Memory, and Architecture* (New Haven: Yale University Press, 1977).
2. Ashley Montagu, *Touching: The Human Significance of the Skin*, 1986, p. 3.

WORLD & IMMERSIVENESS

Then, what is the concept of world? Can world(s) be found in art forms like architecture and music?

The idea is to create a world for the audience to enter where architecture magnifies the expressive dimensions of music and sound. [1]

The fundamental commonality between architecture and music is the immersiveness. People are said to be "immersed" in musical world. This paragraph also suggests that music possesses a world with dimensions where people escape into. Steven Holl also stresses on the immersiveness of both arts as he put it - "engulf the body in space" and quotes "A composition is like a house you can walk around in" from John Cage, an American composer and music theorist. [2] However, music does not consist of any matter, how can space be defined? Is the music world an imaginary space for our souls? The concept of space related to sound and music will be further discussed in section.

1. Elizabeth Martin, *Architecture as a Translation of Music* (New York: Princeton Architectural Press, 1994).
2. Steven Holl, 'The Architectonics of Music', *PAJ: A Journal of Performance and Art*, 39.2 (2017), 50–64 (p. 50).

SENSES

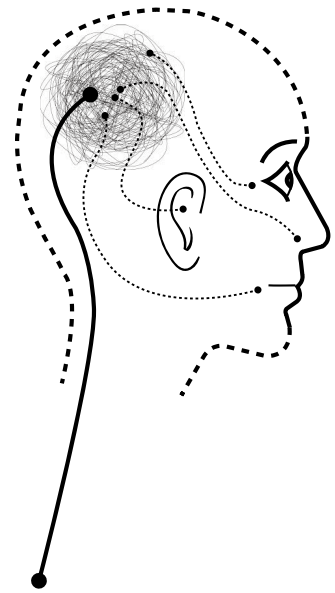
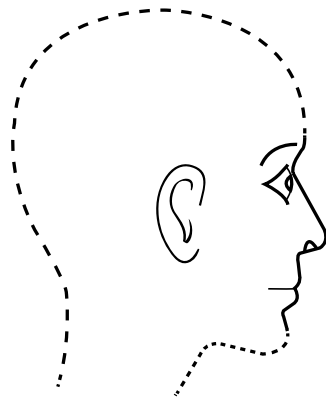
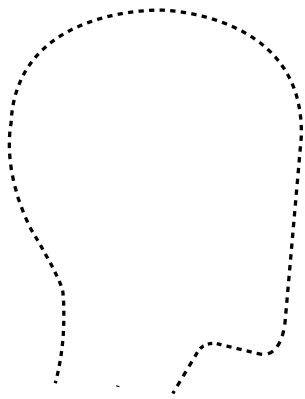
Senses link oneself to the world. Pallasmaa assumes the human body as the locus of perception, thought and consciousness. [1] We move, in order to perceive and experience a space. We may not be understanding all about a space, but we are aware of the changes and effect it brings and reflects on our relationship with the space. The senses articulates, stores and processes the sensory responses and thoughts.

In addition, in the book Pallasmaa also mentions psychologist James J. Gibson, who treats senses not mere passive receivers, but as aggressively seeking mechanism. [2] The active seeking mechanisms further reinforces the point that we are part of interactions between the world and our own bodies. We are taking actions in order to perceive, sense and learn about our world.

As human beings with eagerness, we try to understand our world. The physical body allows us to explore throughout this world. It can also be understood through the quote "The Hands want to see, the eyes what to caress" by Johann Wolfgang Von Goethe. [3] The word "want to" implies that our body is in an active state of seeking. We are please to stay in or stay with something which make us feel comfortable or happy. We stay away of something which make us feel scared. Feeling is one of our innate perimeters for us to make our path to proceed or retreat.

Secondly, James J. Gibson also points out that senses are not independent and detached entrance. They are five sensory system connected to our bodies as a whole, with the sense organs as gates open to the world. [4]

1. Juhani Pallasmaa, *The Eyes of the Skin* (Chichester: Wiley, 2012), p. 11.
2. *ibid.*, p. 45
3. *ibid.*, p. 17
4. *ibid.*, p. 45



MAN-MADE BODY

Regarding the idea that architecture and music is a world where people immerse themselves into, I find the follow paragraph from Pallasmaa which elaborates on this point.

Architecture is essentially an extension of nature into the man-made realm, providing the ground for perception and the horizon of experiencing and understanding the world. It is not an isolated and self-sufficient artefact; it directs our attention and existential experience to wider horizons. [1]

On top of the idea that architecture is a man-made realm, there are several key points:

- The man-made realm, is an extension of nature. It shares similarities of the nature. As nature exists long before the first human, it can be deduced that architecture is the creation from human by imitating the nature.
- Secondly, architecture is not a self-sufficient artefact. Its role to serve as a mediation between human beings and the world, a mediation through which we can experience and understand the world. It directs how the flux is reaching us from the outer-world.

Pallasmaa further elaborates on this man-made realm by treating it as an embodied and lived existential metaphors. [2] More messages are brought up. It can be understood that we are not only inside an architecture, but are embodied, which means inside the "body" of an architecture. Architecture is treated as a body, where we excels our existence. The word "being" is to stress the moments we are living out our lives in a bigger whole. Architecture enables us "to settle ourselves in the world, and to place ourselves in the continuum of culture and time." as Pallasmaa put it. [3]

I find another paragraph by Frank Lloyd Wright, which clarifies the timeless task of architecture with the concept of integrity.

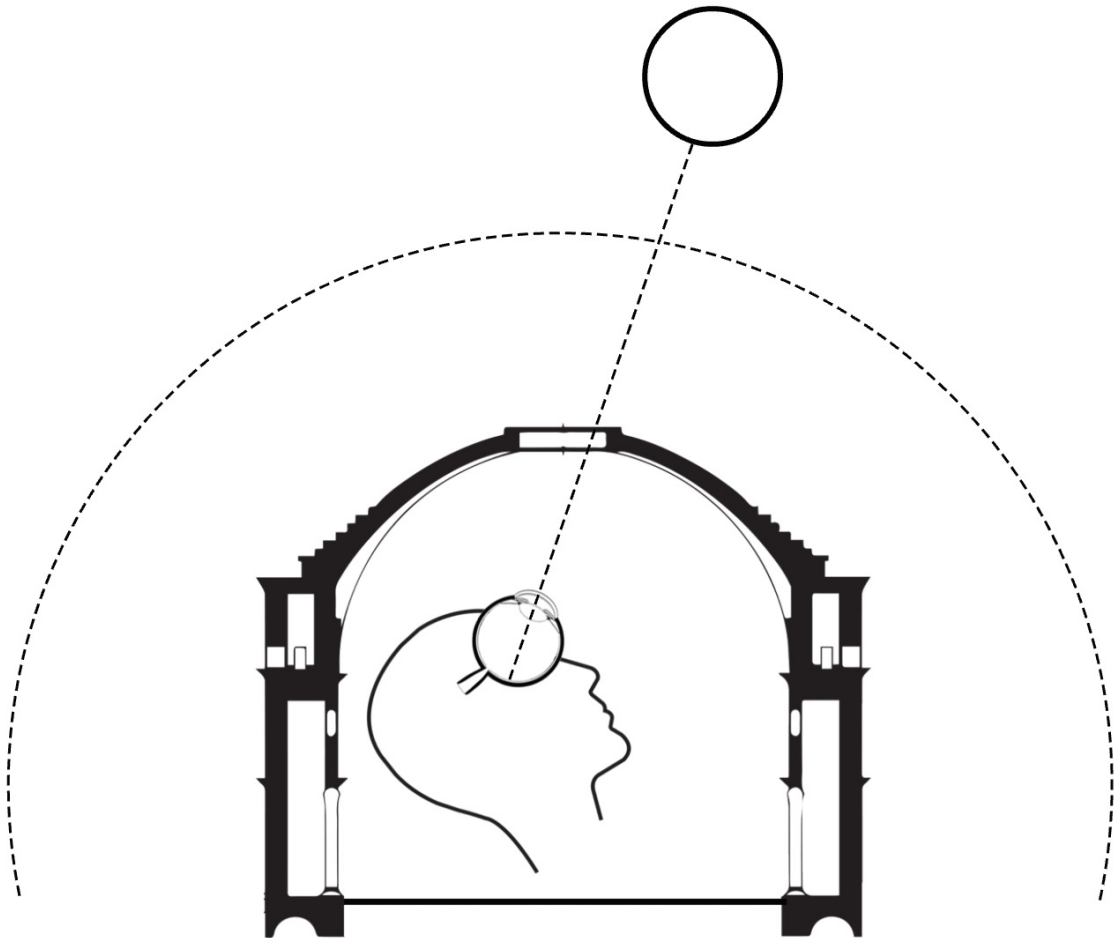
What is needed most in architecture today is the very thing that is most needed in life - Integrity. Just as it is in a human being, so integrity is the deepest quality in a building [...] If we succeed, we will have done a great service to our moral nature - the psyche - of our democratic society [...] [4]

It is understood that placing ourselves in a society is not enough. It involves the integrity of an individuals. We are not like a "dead" object placed or organised in a box, but an individual with subjective thinkings and feelings. It is not about where to situate people inside a building, but how people experience inside the architectural body.

1. Juhani Pallasmaa, *The Eyes of the Skin* (Chichester: Wiley, 2012), p. 44.
2. *ibid.*, p. 76
3. *ibid.*
4. Frank Lloyd Wright, "Integrity", in *The Natural House*, 1954. Published in *Frank Lloyd Wright: Writing and Building*, selected by Edgar Kaufmann and Ben Raeburn, Horuzib Press (New York, NY), 1960, p. 292-3.

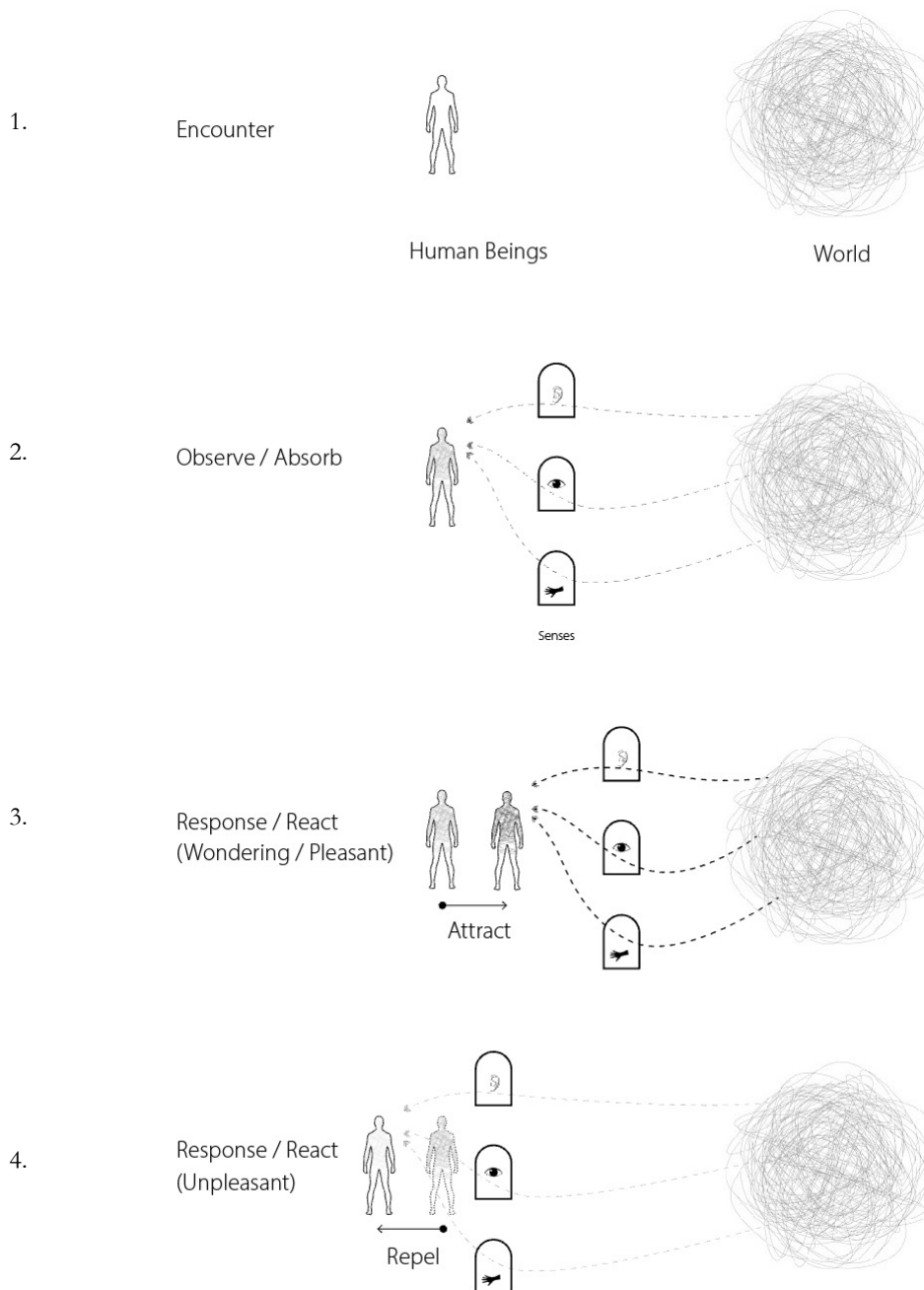
CHAPTER I

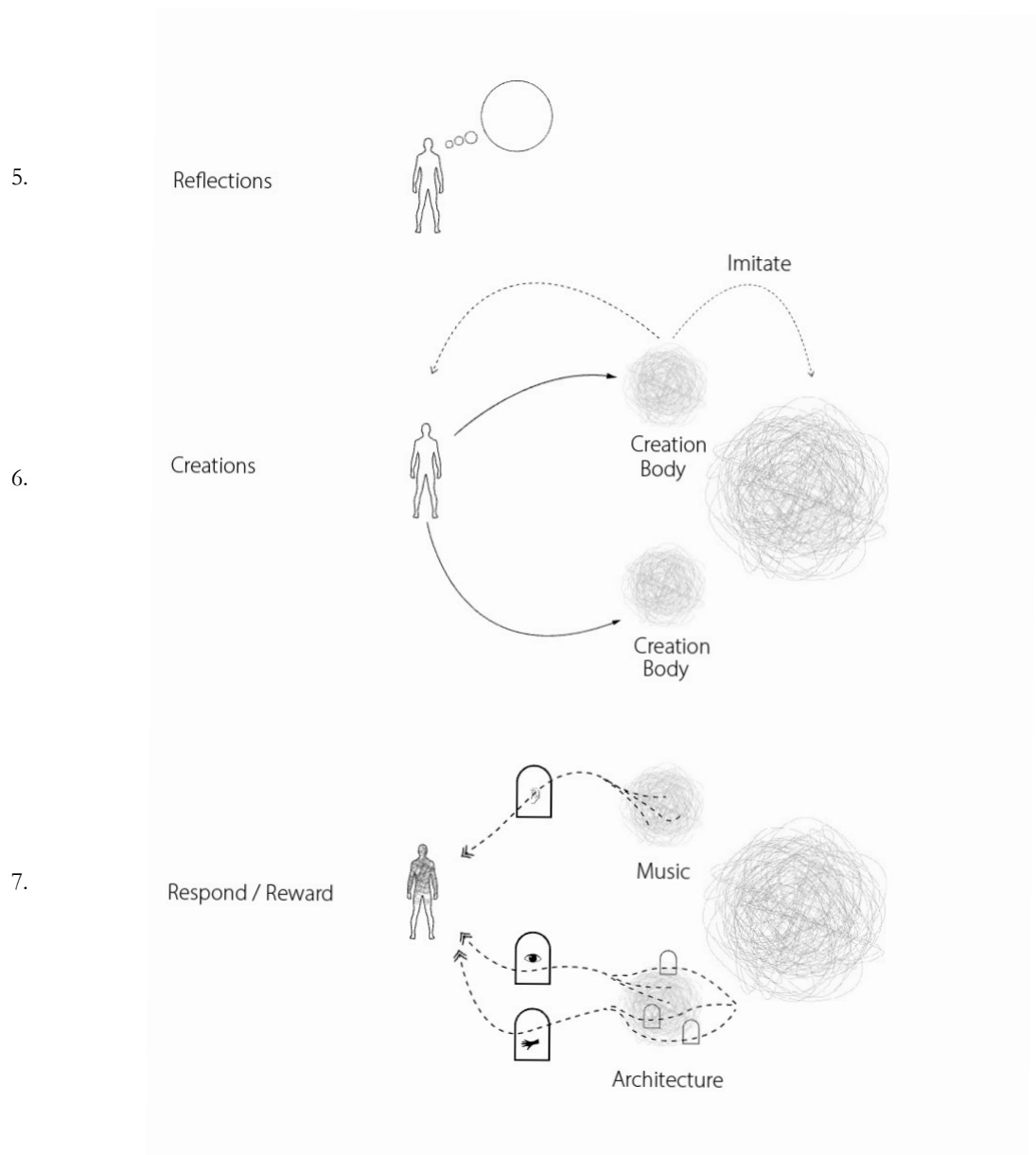
This diagram is to illustrate the concept of embodiment and imitation. We are embodied within larger bodies, like the architecture, and the earth. Flux, in this case the sunlight, passes from the sun body, penetrating the atmosphere and the dome, which serve as the skin of the architecture and the earth respectively to our eyeballs. Architecture, in this case the Pantheon in Rome, works like an eyeball, with its hole on the top imitating the pupil of the eye, as pore of the skin.



My illustration based on the Pantheon section,
<<https://i.pinimg.com/originals/14/80/2f/14802f7c90dc48af6068b7decee8829d.jpg>>

This summary diagram illustrates on connection between human beings, the world, and creations through the concept of senses and bodies. Openings are drawn, through which the flux penetrates into the bodies. Senses organs are the openings on the membrane of the human bodies, echoing with the idea Pallasmaa quotes from Ashley Montagu - “the mother of the senses.” [1] The world is drawn as a sophisticated network, with lines indicating flows.





BODY & MEMBRANE

From the research in the previous section, it can be deduced that the world, is made up bodies. I hypothesis that even immaterial existing things like music possesses a body. I hold the view that any composition, and the mechanism we sense, can be explained with the concept of bodies and flux. The following are the properties I observe for bodies.

- Bodies can be entity in any scales
- Bodies embodies and are embodied by other bodies, inter/intra-related to each other
- A body possess certain state of form
- Every body is not eternal, they have cycle for their live and then gone. Cells, human, Planet, all live for certain period and then perish.

The body is not an enclosed within hard shells. Its outermost layers are the membrane which is permeable for certain substance or things, allowing penetration or exchange of things. For examples, Cell has cell membranes, human being has skin, and the Earth has atmosphere. The relationship between formation of skin are further discussed on Chapter III. Membrane is associated with permeability. For the things to pass through, there are two types.

- One is matter in nature, such as particles passing through our skins.
- Another is as flux, flow of energy or "energy wave, which contains no matter. For example, lights coming from sun to the Earth through the filtering of atmosphere.

For a bodies, it is not necessary possessing a tangible form, provided that it has the capacity to control penetration of things. In music, its body is immaterial in nature. Yet, it can address and direct the flux through its body to our human being bodies.



My illustration, with the use of cell diagram from Christopher Alexander, *The Phenomenon of Life*. p. 269.

DEFINITIONS OF TIME

Any existence is related to space and time. Is form dependent on time and space? The following part will be looking into the relationship between mainly form and time. Different understanding of time will can lead to different understanding of form.

From one passage in the book Deleuze on Music, Paintings and the Arts, it clearly points out the two concepts of time - Aion and Chronos, which can also be understood as the linear or the points.

Drawing on the Stoic opposition of Chronos and Aion , Deleuze and Guattari contrast the measured time of a regulated succession of past , present , and future (Chronos) with an unmeasured and unregulated time that obscures the lines between past , present , and future (Aion)...[1]

...[Aion] as “ the indefinite time of the pure event or becoming , which articulates relative speeds and slowness independently of the chronological or chronometric values that time assumes in the other modes ” (MP 322 ; 263). Such is the time of the haecceity , the eventum tantum , “ which has neither beginning nor end , neither origin nor destination ; it is always in the middle . It is not made of points , but only of lines ... ” [2]

Aion, which has several properties. Based the quality, it is better to understand it as the “flow”

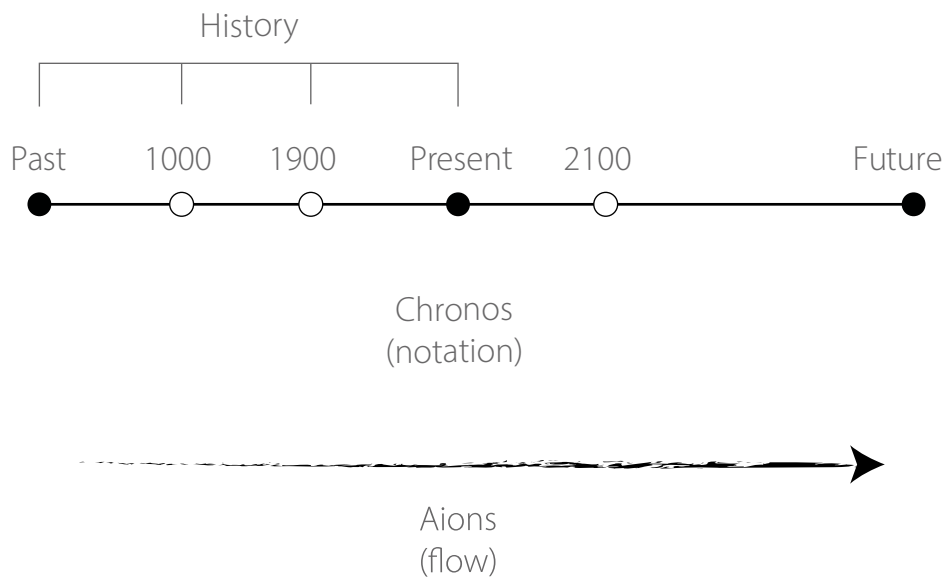
- Contributing to “becoming”, which I understand it as related to changing form.
- Relate to the concept “speed”
- No beginning nor end

Chronos can be understood as the referencing systematic notational points on the linear time Aion, made by certain species, human in this case, it can be understood as “pinpoints”.

History, according to the book, belongs to the world of chronos, related to the measure and sequence. We can traced back ot history which are recorded / pinpointed with words. However, we cannot experience again the history. [3]

1. Ronald Bogue, Deleuze on Music, Painting, and the Arts, 2017, p. 34.
2. *ibid.*, p. 28.
3. *ibid.*, p. 37

CHAPTER II



FORM & TIME

Anything that exists in this universe are associated with certain form. Form was a disputable idea since Medieval philosophy. It was Aristotle the first one introduced discourse distinguishing the idea of form (morphe) and matter (hyle). “Aristotle defines X’s matter as “that out of which” X is made.” [1] Form is how we perceived and recognized certain object with our sense organs, according to Aristotle’s theory of perception. The same matter can be turned into different form, like chocolate bar or chocolate egg. Different matters can be turned into same form, like chocolate bar or candy bar. In term of music, which is immaterial in nature, musical form usually to the structure of a musical composition or performance, through a series of repetition and variations.

How can we understand form? From the Oxford dictionary, form can be understood as follows. [2]

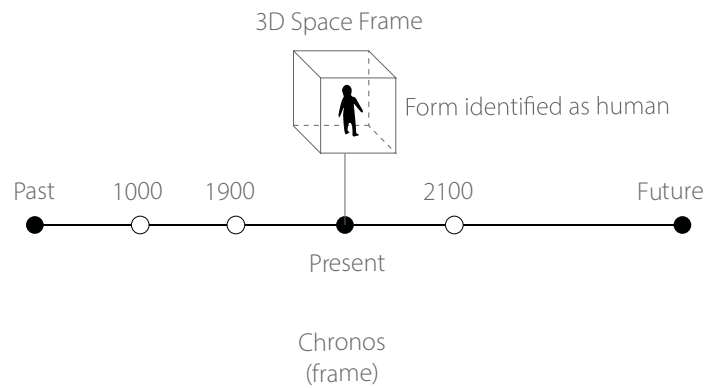
1. the visible shape or configuration of something.
2. a particular way in which a thing exists or appears.

The two definitions can be traced back to two philosophical beliefs. In Materialism, suggested by Democritus, important concepts are atoms (matter), space (emptiness) and motions. Materialism’s main point is “what you see is what you get”. [3] Form here can be associated with object perceived. We perceive certain form from the object according to certain characteristic with our common senses. It is like a “mould” shaping certain materials. Socrates on the contrary, suggested vitalism, with the idea “energy” underlying the entire concept. Under vitalism, form are similar as the idea soul, prior to the material world and being perfect and Ideal while the material world is the “shadow” of the Ideal. [4]

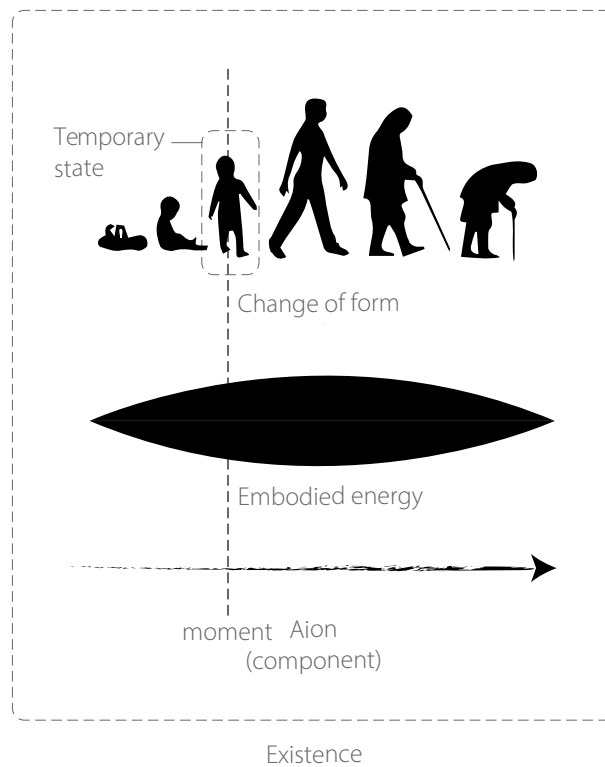
Science was once following the path of Democritus, with Newtonian Physics highlighting the universe are made of matter, with the forces acting on the object. On the contrary vitalism are highly associated with spirituality. Until 1925, quantum physics acclaims that universe is fundamentally made of energy, unfolding possibility bridging spirituality to science.

1. ‘Hylomorphism’, Wikipedia (2019) <<https://en.wikipedia.org/wiki/Synesthesia>> accessed 20 March 2019.
2. <<https://en.oxforddictionaries.com/definition/form>> accessed 20 March 2019.
3. ofkrr, vekmehel. “Bruce Lipton The Biology of Belief Full Lecture.” YouTube, 21 Dec. 2014, <www.youtube.com/watch?v=82ShSNuru6c> accessed 20 March 2019.
4. *ibid.*

CHAPTER II



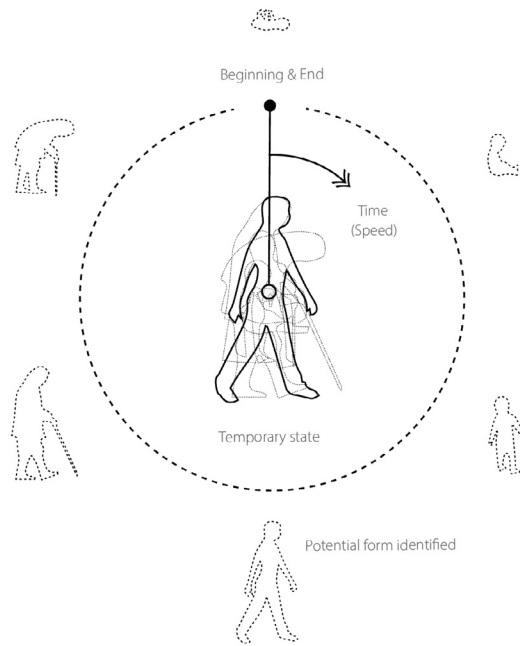
This is the normal understanding of form. The form is associated with the shape or the physical characteristic an object possesses. The object identified in a 3 dimension spatial frame in a particular time spot.



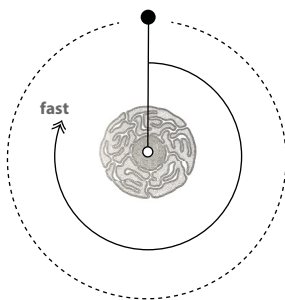
Any form is not in permanent state, but are changing, within certain cycle. The form we perceive is the temporary state of a formation. The form is always changing. It can also be understood as "becoming". As it is always becoming something new, in a new state.

CYCLE

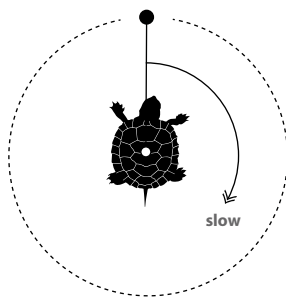
The Cycle is the interpretation of time as a combined reading of Aion and Chronos in circular shape. It is forever going, yet we can identify the beginning or end for a period. While the end turns into another beginning of a new period. Based on its aion properties, its existence is associated with bodies to define the beginning and end.



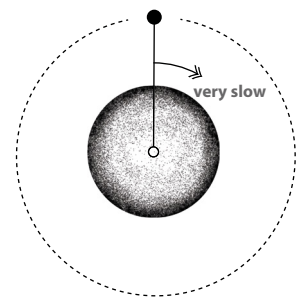
Different things in the universe, have their life cycle period. It is observed things in different complexity, is more likely to have different lifespan. This part will be further discuss in later section concerning the individual and the wholeness.



Cell



Animal



Planet

FROZEN FORM

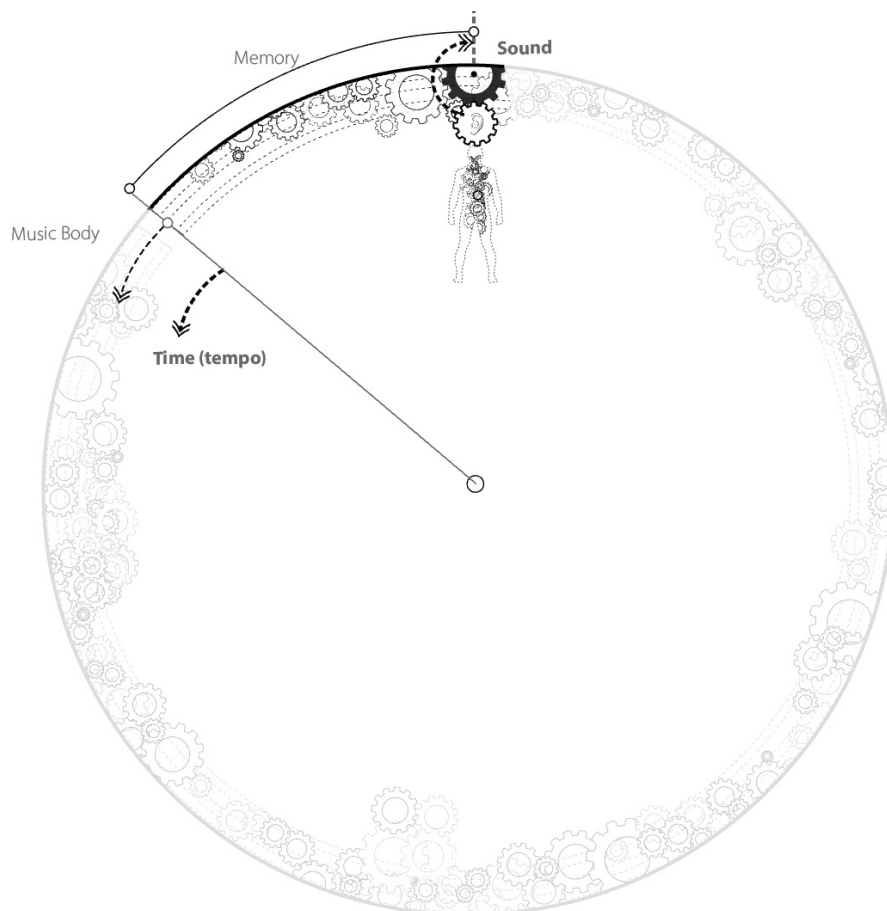
If we can stop the time aion, the form will be stopped at its temporary state. The form can be understood as being frozen. The word "frozen" is not about the materials, but is about the form. It is also as Pallasmaa put it - architecture enables us to perceive and understand dialectics of permanence and change"

EXPERIENCE AS BODIES INTERACTION

The taste of the apple [...] lies in the contact of the fruit with the palate, not in the fruit itself; in a similar way [...] poetry lies in the meeting of poem and reader... [1]

Experience involve fundamental things - composition, time and "I". It can also understand as interaction between the human body and the art bodies. Experiencing music is the interaction between the music body with our body through our ears. The following two are analogical illustration of experience mechanism, focusing on what are involved and their relationship. There are three main points for this analogical illustration - circle, contacts and the gears.

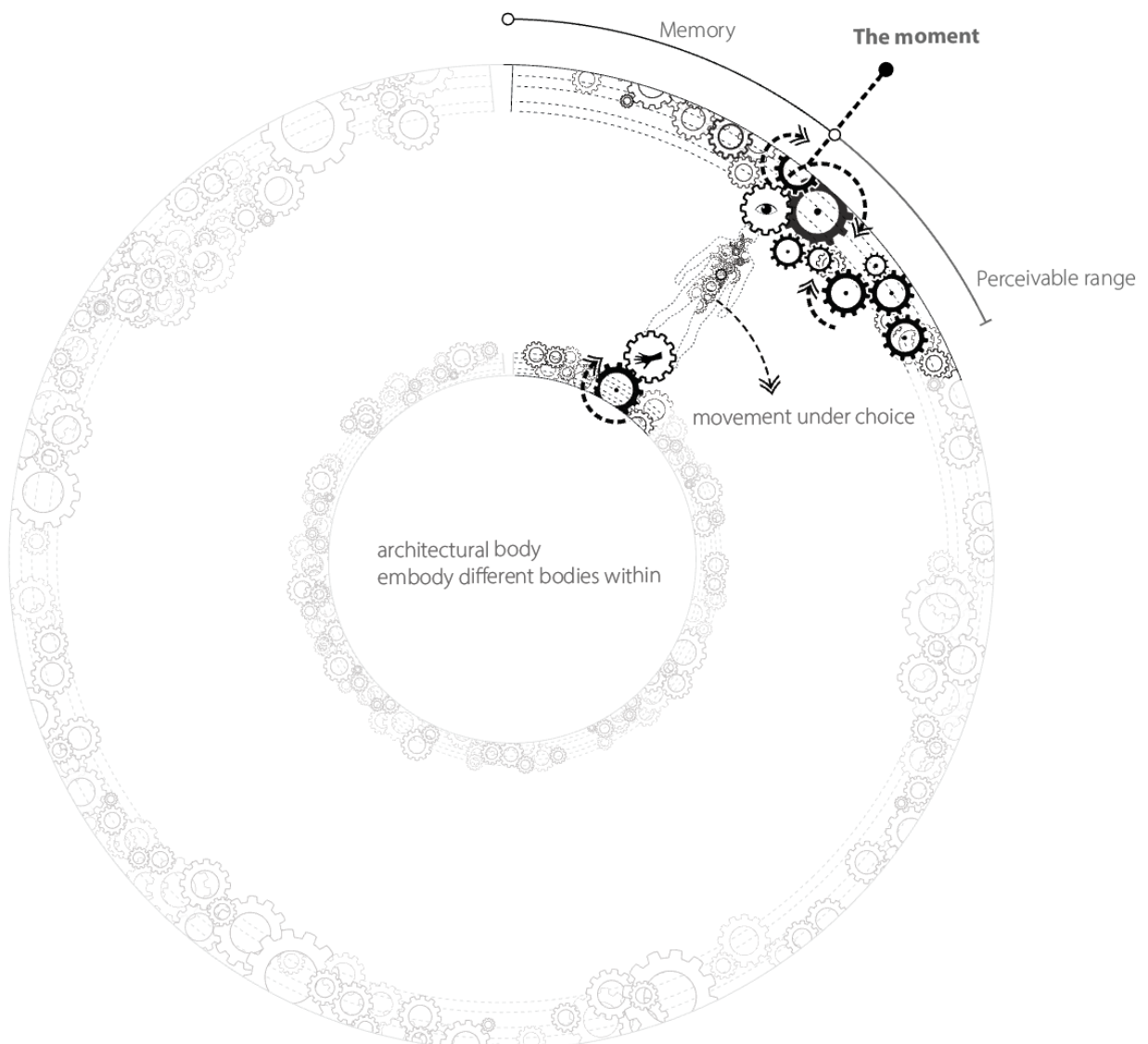
- Circle highlights the concept of cycle. Its shape represents forward sequence of the experience according to the compositional body.
- Contacts highlights the nature of experience.
- Gears highlights the word "trigger". Our bodies reacts instinctly and reflexively under the effect of music.



To experience similarly as music through architecture, the illustrations take reference to the quote from Jan Hoogstad, a Dutch architect.

“The observer notices image shifts through movement and it is specifically those shifts that are responsible for the sensation of space. In the spatial experience, observers combine the image they just saw with the one they see now. [1]

The diagram also illustrates Pallasmaa's view that People is an active seeking locus embodied in an architectural body. [2]



1. Jan Hoogstad, 'Muziek en architectuur, een theoretische beschouwing over de relatie tussen geluid en ruimte' (Music and Architecture, a theoretical vision of the relationship between sound and space), in *Wiederhall* 1988, no. 10, p. 30-33.
2. Juhani Pallasmaa, *The Eyes of the Skin* (Chichester: Wiley, 2012), p. 11.

SOUND & EVENT

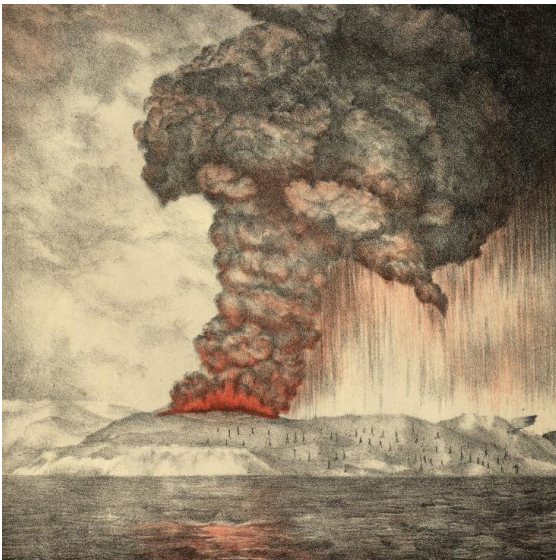
The previous sessions, the mechanism of experiencing music and architecture are expressed in analogical representation. This part is to explore on what are the representation referring to. If musical body and architecture body triggering our emotions, what are the element constituted to their bodies. To understand the essence of music, which is the composition of sounds. It is necessary to understand the essence of sound. If we can perceive imaginary music under synesthesia, it is similar to sound. The next part will focusing on how sound can be understood in terms of space & energy and form.

The figure (left) below shows the eruption of Krakatoa, and subsequent phenomena, which occurred in 1888. The figure (right) is a map showing the area in which the Krakatoa explosion could be heard, indicating an area. It can be concluded that sound is associated to certain territory. And its territory is attributed to certain event, in this case is the explosion.

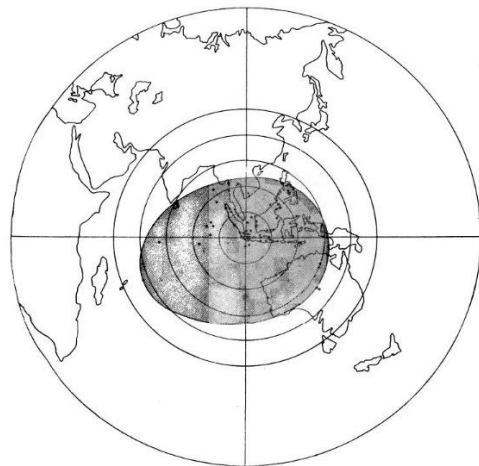
Barry Blesser and Linda -Ruth Salter wrote an article relating the aural experience of space to happening of events. The fundamental functional role of hearing is related to the survival advantage while understanding speech and enjoying music come as an expanded ability added-on. We as human beings, have our hearing sense always active to encounter sudden impact or periodic vibrations, produced by the surrounding sonic event, known as “soundscape” [1] , and eventually tell the visual system which direction to look. By this mean, auditory system is a reliable way for sensing dynamic events. [2]

Furthermore, the idea of “eventscape” and “objectscape” is brought up as a supportive concepts. “The focus of hearing is on dynamic events. In contrast, the focus of vision is on static objects. We are aware of the relatively static world of objects and geometries, which reflect ambient light, through vision.” [3]

What is the nature of this kind of space?



A lithograph of the massive 1883 eruption of Krakatoa. (Credit: The eruption of Krakatoa, and subsequent phenomena, 1888; Parker & Coward; via Wikipedia)



A map showing the area in which the Krakatoa explosion could be heard. (Credit: “The eruption of Krakatoa, and subsequent phenomena,” 1888)

1. R. Murray Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World* (Simon and Schuster, 1993).
2. Barry Blesser and Linda-Ruth Salter, ‘Aural Architecture: The Invisible Experience of Space’, *OASE, Immersed. Sound and Architecture*, 78 (2009), 50–56 (p. 50).
3. *ibid.*

AUDITORY SPACE

The relationship between sound and space can be understood in the following paragraph.

Auditory space has no favored focus. It's a sphere without fixed boundaries, space made by the thing itself, not space containing the thing. It is not pictorial space, boxed-in, but dynamic, always in flux, creating its own dimensions moment by moment. It has no fixed boundaries; it is indifferent to background. The eye focuses, pinpoints, abstracts, locating each object in physical space, against a background: The ear, however, favors sound from any direction. [1]

According to the paragraph, the diagram highlights the following properties of auditory space:

- Has no fixed boundaries, but not no boundaries.
- Dynamic and in flux
- Creates its own dimension
- Related to temporary time - moment
- Any direction

Auditory space does have boundaries. Boundaries appears where we start to perceive the sound, which means the energy hitting our eardrum arrives to certain perceivable level. Auditory space is a relative concept. It is much larger for dogs than human beings.

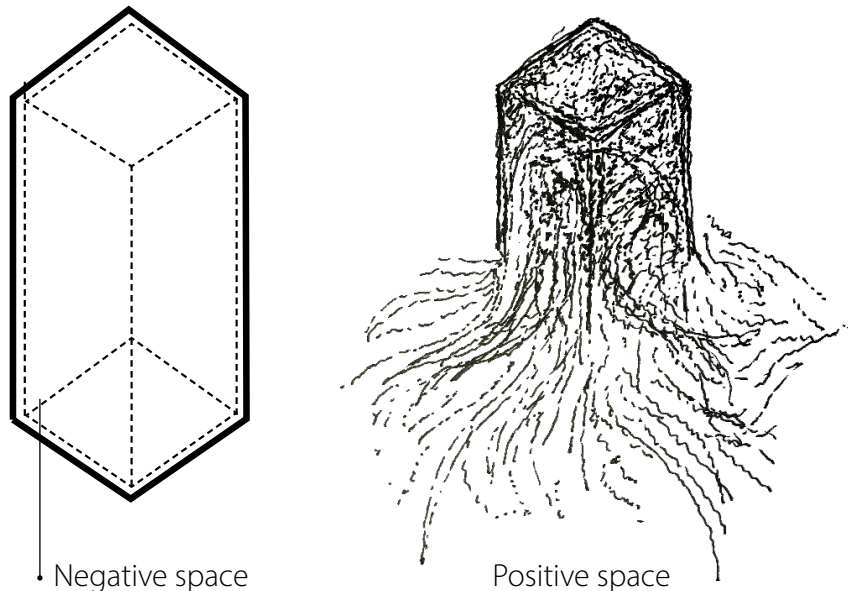
POSITIVE & NEGATIVE SPACE

The auditory space can also be understood as positive space. Space can be defined as negative and positive according to Christopher Alexander.

“In the present Western view of space...we tend to see buildings floating in empty space, as if the space between them were an empty sea.” [1]

“The definition of positive space is straightforward: every single part of space has positive shape as a center. There are no amorphous meaningless leftovers.” [2]

For negative space, it needs to be defined by positive object. It is understood that its existence depends on the object. For positive space, we can imagine as fluid, which has the power to flow. It will fill up all the emptiness, spreading anywhere according to the wave. Positive space actions to excel. Alexander use the phrase "swelling until it meets the others" [3] to describe the nature of positive space and also analogies it to "growth as a cell from the inside". Verbs are the essence of a positive space, with certain direction.



1. Christopher Alexander, *The Phenomenon of Life: An Essay on the Art of Building and the Nature of the Universe* (Berkeley, Calif.: Center for Environmental Structure, 2002), p. 174.
2. *ibid.*, p. 176.
3. *ibid.*, p. 173.

SPACE & WAVE

Edgard Varèse, a French composer, also associates sound to the concept of energy. He observes similar physical phenomenon from the waves of sound and light as that of the water. He was fascinated by the wave properties of physical matter and treat music as an art - science. His vision of music is that "sound as living matter" and "musical space as open rather than bounded". [1] The musical space he is talking can be understood as the positive space and it is further ensured that we can treat positive space as a invisible crafting fluid, comparing to the real water wave. The following diagrams shows that space are created based on the action of the water. Another thing suggested is that live and energy are related under his vision.



Water From The Ocean Through Holes In The Rocks. Stone Arches, Caves, Rock Formations At Dona Ana Beach <<https://mx.depositphotos.com/99114460/stock-photo-ocean-water-seen-hole-rocks.html>> [Accessed 21 March 2019].

1. 'Edgard Varèse', Wikipedia (2019) <https://en.wikipedia.org/wiki/Edgard_Varèse> accessed 20 March 2019.

ENERGY, FORCE & MANIFESTO

Without any external factors, the distribution of the energy is roughly even and static. Under the effect of gravity, the energy is moving to certain direction with certain speed, understood as the flow of energy. In the flow of energy, time Aion combines with energy and flow in certain direction, which becomes the “force”. In the book *Deleuze on Music, Painting and the Arts*, it mentions that Deleuze and Guattari stress on the concept of force.

...Deleuze and Guattari stress the concept of force, characterizing painting's goal as a rendering visible of invisible forces, and music's aim as a rendering audible of unaudible forces [1]

The Work *Starry Night* from Van Gogh is a good example demonstrating Deleuze and Guattari's point that the role of paintings are to render visible the invisible force. The invisible force is what the artists sense. It gives the subjective impression an artist found in that particular moment. It is observed that flows can be identified from every part of the drawing, for example, in the sky and flowing through the objects like the houses and mountains.



Vincent Van Gogh, *The Starry Night* (New York City: New York City: Museum of Modern Art, 1889).

INTENSITY

To perceive auditory space, the eardrum which is a membrane, is bombarded by the sound wave. The relationship between space, surface and flow of energy can be explored with the concept of intensity. Intensity is understood in physics as follows. [1]

It is the product of:

- Density of energy acting on an surface
- Velocity of energy flowing

The following part I am going to visualize the intensity. The density of the energy is visualized by the density of the points.

FLUX & CREATION

What is the relationship between form, space and energy? In the book *Essays on Deleuze*, in the section of Deleuze's Theory of Sensation, the author quotes the quotes Salomon Maimon that:

it is the form of space itself that must be defined a priori as intensive quantity; there is therefore an internal and dynamic construction of space that necessarily precedes the representation of the whole as a form exteriority [2]

The creation of things can be understood in terms of change of density of energy, or the energy level. Energy is the source for creating, but it needs to arrive to a surface and reach certain intensity. When the limit or threshold is reached, things will be actualized. The following parts will be introduce concepts on how forms can be created from flux.

1. 'Intensity (physics)', Wikipedia (2019) <[https://en.wikipedia.org/wiki/Intensity_\(physics\)](https://en.wikipedia.org/wiki/Intensity_(physics))> accessed 20 March 2019.
2. D. Smith, *Essays on Deleuze* (Edinburgh University Press, 2012), p. 95.

GRAVITY IN ART

Bulat Galejev, a science researcher, artist and long-time director of the Prometei Institute, writes many books and articles concerning the music and synaesthesia. In the articles Evolution of Gravitational Synesthesia in Music: To Color and Light!, he draws relationship between gravity and the sensation from the music, referencing to a Russian musicologist, Boleslav Yavorsky's analogy of "modal attraction - terrestrial gravity". [1]

It ensures that the composition can be approached through dealing with force. He also brings up the concept of attraction, which is the gravity. To create the flux, gravity, which acts as the drive for the flow of energy, is needed. Gravity, can be understood as the "dragging" of the energy flow. The word "drag" can also find in the description of gravity in general relativity "Rotating masses "drag along" the spacetime around them". [2]

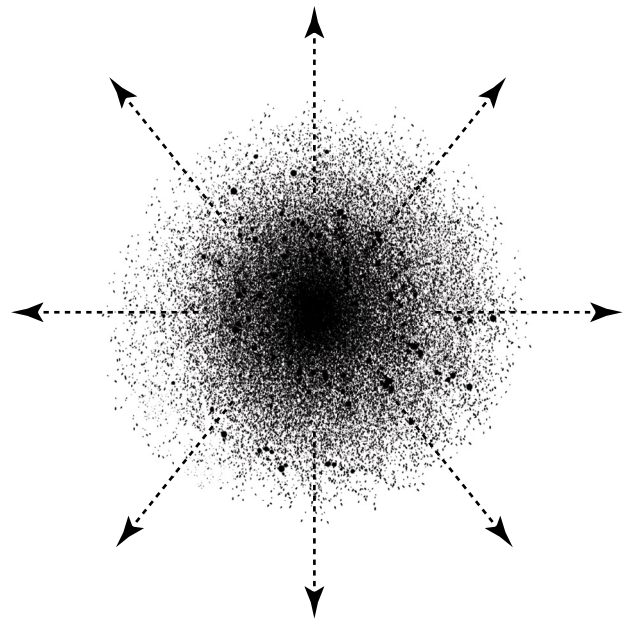
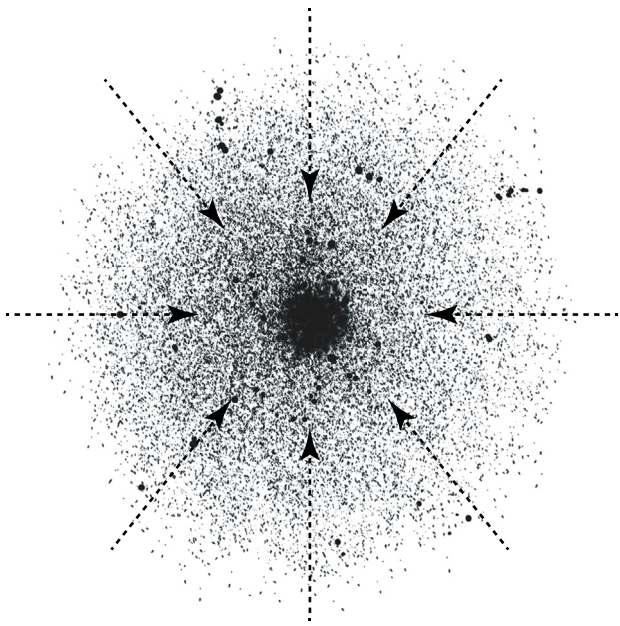
LOCALIZED & EXTENSION

In the book Essays on Deleuze, in the section of Deleuze's Theory of Sensation, we can find the following statements.

In empirical experience, to be sure, we know only intensities or forms of energy that are already localized and distributed in extended space; intensity is inseparable from a process of extension that relates it to extended space and subordinates it to the qualities that fill space. [3]

Two important idea is localized and extension. Under the effect of gravity, the energy is centralized in middle point. As the density of energy increases, the pressure builds up increase which will tend to push the energy away. In our daily experience, we are drawn, attracted to the events which emits the energy to us.

1. Bulat M. Galejev, 'Evolution of Gravitational Synesthesia in Music: To Color and Light!', Leonardo, 36.2 (2003), 129–34.
2. 'Theory of relativity', Wikipedia (2019) <https://en.wikipedia.org/wiki/Theory_of_relativity> accessed 20 March 2019.
3. D. Smith, Essays on Deleuze (Edinburgh University Press, 2012), p. 95.



SYSTOLE & DIASTOLE

Systole and diastole, easier understood as positive and negative pressure in the heart, are the essence of the formation. In Deleuze on Music, Painting, and the Arts, the author points out that Henri Maldiney, a French Philosopher, understood form as a “dynamically a process of spontaneous emergence and self-shaping” while “pattern is the unfolding pattern of this self shaping activity”

... The Rhythm of systole and diastole that plays through the self - shaping activity of form in an artwork creates its own temporal framework, when we experience the artwork we also enter into the implicated time of its form... [1]

For the self-shaping activity, Maldiney identifies three moment as elaborated as follows

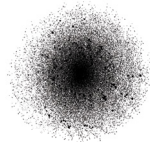
Maldiney identifies three moments in the manifestation of form: a vertiginous disclosure of the chaotic world of sensation; a systolic condensation of elements toward definite shapes; and a diastolic eruption of forces that dissolves those shapes and establishes a pathic communication among the components of the whole. [2]

The three moments can be understood easier as follows:

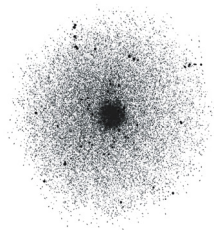
- Originally, there are even distribution of energy
- Systole can be understood as the pulse, the extension, the push to create flux, to certain level that elements actualizes the form in material
- Diastole is the gravity, which sets up the attraction point and direction among the bodies. It can be from bigger body to its constituent bodies. In case of human, it is the human body to the human cells.



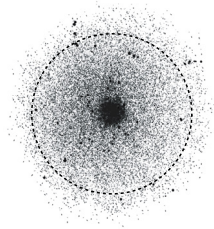
Chaos



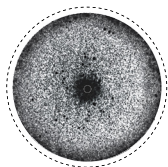
Diastole



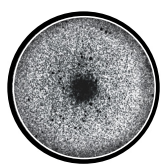
Systole



Force harnessed



Energy density increases



Formation of wall



Under force of another body



Opening is created

FORM & SPACETIME

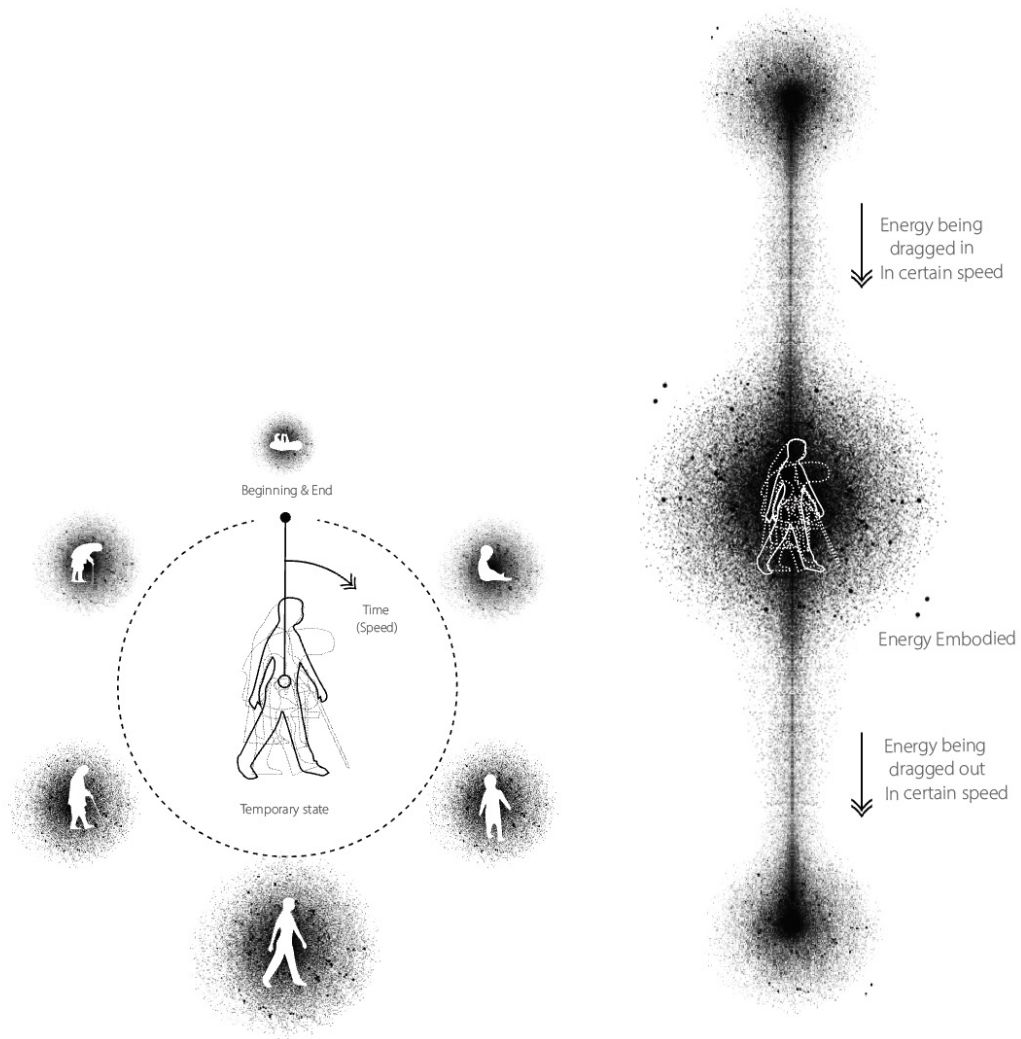
In the previous section, it is known that form and time are intertwined. Now with the concept that formation and positive space are intertwined. It can be deduced that form, space and time can be unified as one in terms of energy. The following paragraphs are picked.

...Rhythm of form is not regulated by an external time measure. The time of rhythm Maldiney relates to Boulez's amorphous, nonpulsed, "smooth" time ... The rhythm of systole and diastole that plays through the self-shaping activity of form in an artwork creates its own temporal framework [1]

When we experience the artwork we also enter into the implicated time of its form, a perpetual Now outside commonsense coordinates. [2]

Maldiney's draws on relationship between the action systole and diastole, formation and time. The "time" he mentions can be understood as the "aion" from our previous discussion. It is the carrier of the energy flow. As the existence and form of the body can be also be understood in term of energy flow, the concept of space and time is united as one, understood as spacetime which contributes to form. "Spacetime is any mathematical model that fuses the three dimensions of space and the one dimension of time into a single four-dimensional continuum." [3] The lifetime of body also depend on the speed of energy flowing into and out of the body. Existence, form, space and time are all intertwined. The bodies of artworks can also be explained in terms of spacetime, which gives an interpretation how space can be perceived even in the immaterial body of music.

1. Ronald Bogue, Deleuze on Music, Painting, and the Arts, 2017, p. 120-121.
2. *ibid.*
3. 'Spacetime', Wikipedia (2019) <<https://en.wikipedia.org/wiki/Spacetime>> accessed 20 March 2019.





This is an experiment with a glass funnel containing magnetic powders. It can be understood as process of formation. Mentioned in the previous section, when the energy intensity reaches a threshold, it can actualize into matter. The flow of the magnetic powders can also be understood as the flow of energy. The gravity, which is represented by a magnet, holds the form together. With energy keeps flowing to the body, it grows bigger. The form is changing in reality, yet it is frozen in this particular moment through a photo.



The energy flow is affected by the points of gravity. In this experiment, I introduce more gravity points. The form is changed according to the attraction of the gravity. During the process, it is like one body is reproducing into more bodies.

Section II
- Sensation -

FORM & SENSATION

The previous discussion suggests that form should be understood as formation, which is intertwined with spacetime in terms of energy. In this section, one more layer is added to the picture, which is the sensation. Art, in form of a composition, should address both the form and the sensation.

“Composition is the sole definition of art” [1]

“Everything takes place between the compounds of sensations and the aesthetic plane of composition” [2]

The the book Deleuze on Music, Painting and the Arts, the author elaborates on these two quotes that:

Sensations are percepts and affects, “beings” extracted from the perceptions and affections of everyday corporeal experience, which then become compositional elements, that the artist shapes on an aesthetic plane of composition and renders perceptible through materials that have been rendered expressive. [3]

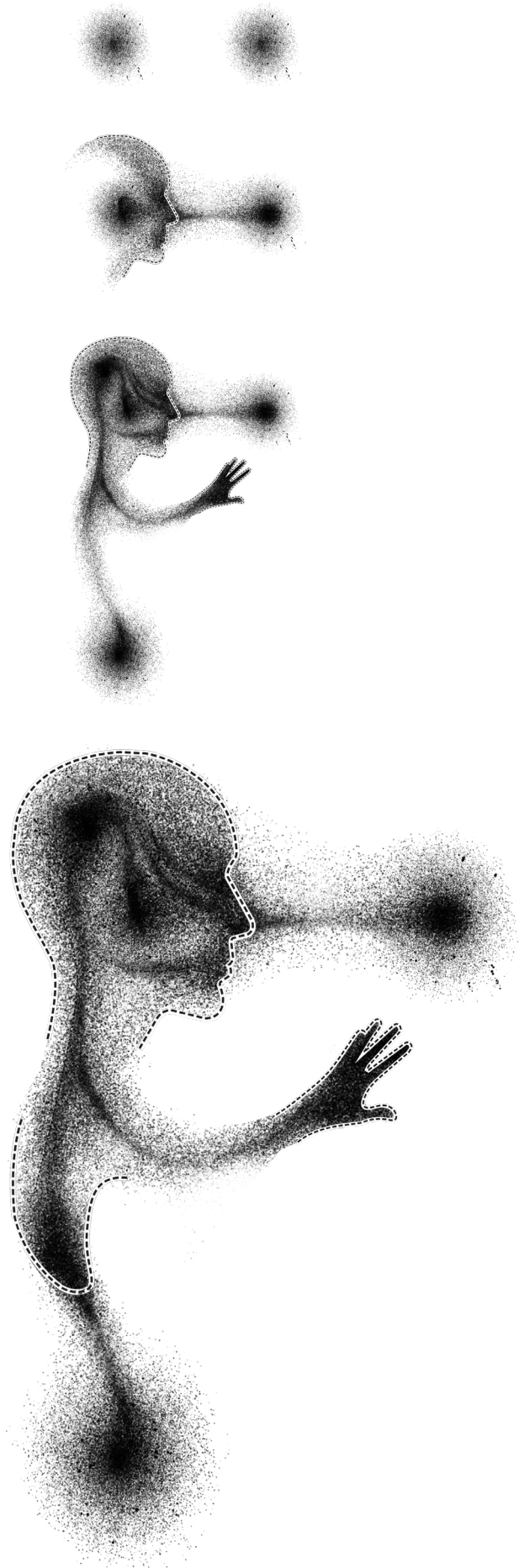
From the paragraph, the word “plane” I will understand as different aspects looking into the compositional compound. The following points can be understood that:

- Sensation includes perceptions and affections
- Composition is the intertwine of both sensation and the formation of body at the same time, following the energy flow.

This points also suggests that the formation of one body and the sensational mechanism are dependent on the other bodies. The universe is one wholeness. The book mentions Paul Cezanne’s saying that “breathes the virginity of the world”[4]. Man is “absent”, he states, “but everywhere in the landscape” Treating the world as objects in a three-dimension environment cannot explaining our subjective feelings. However, if we treat form through the perspective of energy, the subjective effect can be visualized. Form and sensations are united in the four-dimensional continuum.

1. Gilles Deleuze and Félix Guattari, *What is philosophy?* (New York: Columbia University Press, 1994), p. 191.
2. *ibid.*, p. 196.
3. Ronald Bogue, *Deleuze on Music, Painting, and the Arts*, 2017, p. 196
4. Henri Maldiney, *Regard, Parole, Espace* (Lausanne: L’Age d’homme, 1973), p. 150.

CHAPTER IV



SIGN

Sign is identified or sensed when a body is receiving passage from another body, receiving actions from another body. The following paragraph concerning sign is picked.

A Sign, according to Spinoza, can have several meanings, but it is always an effect. An effect is first of all the trace of one body upon another, the state of a body insofar as it suffers the action of another body.” [1]

It is suggesting that in an experience, two or more bodies are always involved. It is also associated with intensity. According to Deleuze, states in the book *Essays on Deleuze*, when the intensity reaches a certain magnitude, a "quality" would appear. When the intensity reaches certain threshold, feelings can be actualized.

AFFECT & AFFECTION

I would understand feeling as a particular sign. Only energy flow in certain order into our body with lead to certain feeling. The following are more concepts which help explains.

From the first chapter, our senses organs are like gate to the exterior world, receiving flux from the world. This part will elaborate on the flux concerning with sensation. The following paragraphs are picked.

These are passages, becomings, rises and falls, continuous variations of power that pass from one state to another. They are signs of increase and decrease, signs that are vectorial, and no longer scalar like the affections, sensations or perceptions. [2]

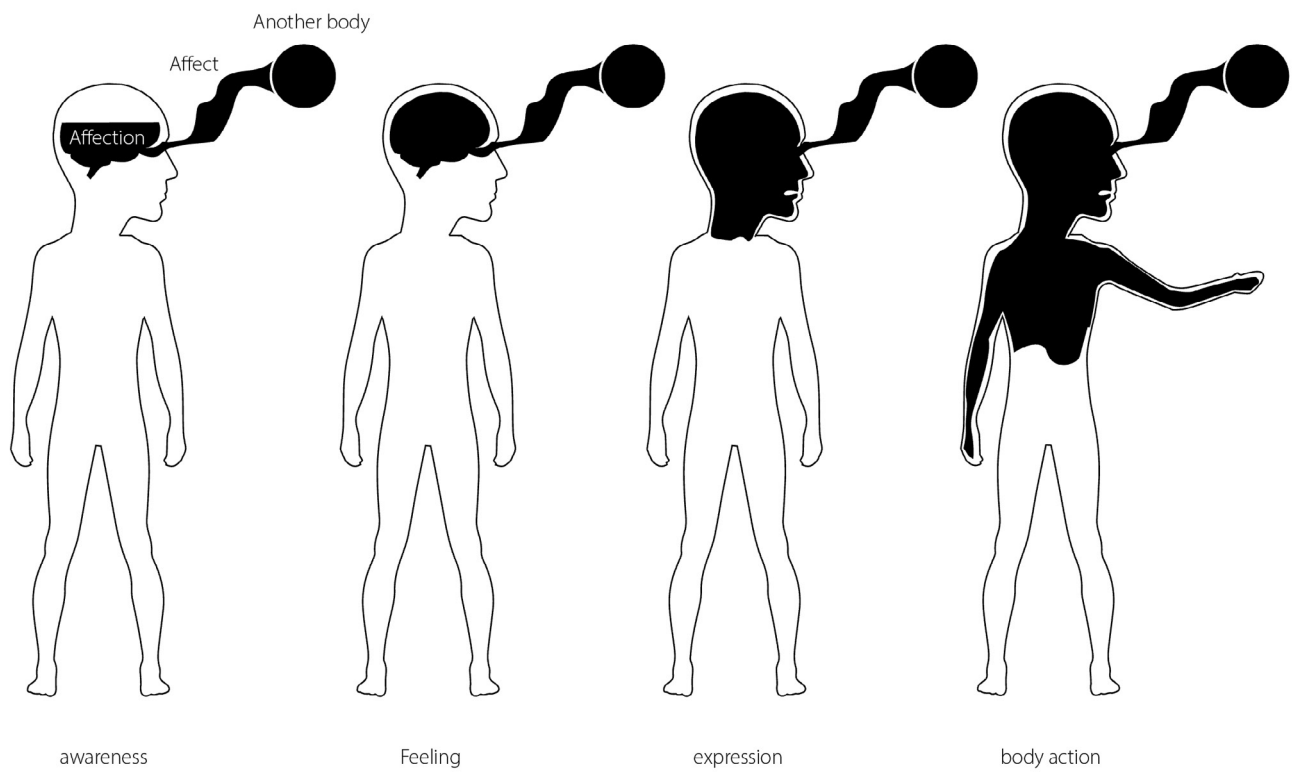
...Each state of affection determines a passage to a “more” or a “less”: the heat of the sun fills me or , on the contrary, its burning repulses me. Affection is therefore not only the instantaneous effect of a body upon my own, but also has an effect on my own duration - a pleasure or pain, a joy or sadness. [3]

We can understand affects as the energy flowing to us and affection as the energy captured and embodied by us. In addition, it is not only a bunch of energy, but energy in certain state form, with certain intention. In the Affection, we experience ideas which are relative in nature, like “more” or “less”. The ideas of affects and affections is manifested through our facial muscles, resulting in expression.

1. Gilles Deleuze, *Essays Critical and Clinical*, trans. by D.W. Smith and M.A. Greco (Minneapolis: University of Minnesota Press, 1997), p. 138.
2. *ibid.*, p. 139.
3. *ibid.*

CHAPTER IV

This diagram is the illustration between relationships of sign, affect and affection. The energy is metaphorically drawn as a fluid. Through the sensory organs the affect passes to our body as affection. When different threshold is reached, the body will react to certain extend.



EXPRESSION

The face crystallizes the totality of redundancies , it emits and receives , releases and recaptures signifying signs . It is itself a whole body : it is like the body of the center of signification. [1]

After we receive a passage passing into our body, here it suggests that our body will react by treating it as “more or less”. For example, after a song hits me, I am more happy. The state is always comparing with the previous moment. Here it suggests that our body and mind is not separated. Expression is an facial manifesto of affection. Receiving affects, our facial muscles tend to reproduce the state of the energy captured by us. When the energy reaches certain intensity, facial muscles action to make certain expression. Energy can be understood as captured, crystallized, stored, possessed within the expression and at the same time being released to other bodies. Music can also be understood as an expression. The composer crystallize his state of mind through the musical body, and which are experienced by audiences.

SPONTANEOUSNESS & UNIVERSALNESS

Voluntary facial expressions can simulate spontaneous ones , and different cultures establish different rules for the expression or suppression of genuine emotions as well as the production of deceptive facial signals , but the communication of basic emotions remains constant across cultures . [2]

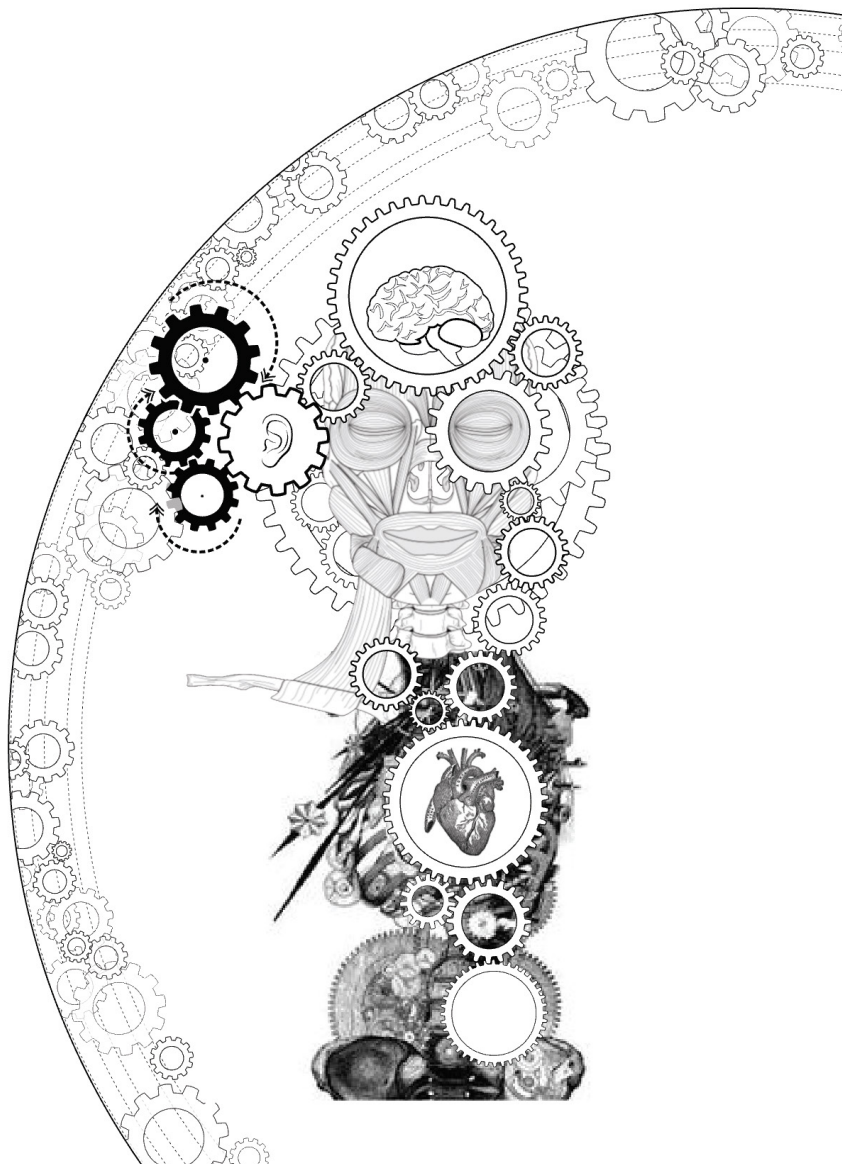
Two things are mentioned in this paragraph. First, it suggests that the facial expressions can be simulated spontaneously. It suggests that when our body receive certain affects, it is our nature to react spontaneously. We have the tendency to behave in certain way under the affection, although we can try to resist with our consciousness.

Another point is that the basic emotions are the similar across different cultures. From the previous part, we know that formation and sensation are intertwined. As we are as form of human beings, it is very likely that we experience similar emotions. That point is also highlights in the prologue of the book *The nature of order - the phenomenon of life*. Christopher Alexander stresses that his book is focusing on the real nature of human feeling, and further stresses “The human feeling is mostly the same, mostly the same from person to person, mostly the same in every person.” He states that most people focus on the difference of human emotion across different cultures and overlooking the innate mechanism of feeling for human beings, which counts for 90% of our feelings. [3]

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1. Ronald Bogue, *Deleuze on Music, Painting, and the Arts*, 2017, p. 89.
 2. *ibid.*, p. 87.
 3. Christopher Alexander, *The Phenomenon of Life: An Essay on the Art of Building and the Nature of the Universe* (Berkeley, Calif.: Center for Environmental Structure, 2002), p. 3-4.

CHAPTER IV

This music experience diagram is a montage and modification of other drawings, developing from the diagram on chapter II. Several more points are made. The group of black gears are the affect which passes to our body. It is a bunch of energy in certain order. Our bodies, composed of smaller bodies like muscles, receives the affection and react spontaneously. The physical body and the mind is interlinked as one big whole.



My illustration with the montages of artwork from Braconnot and illustration from Noted Anatomist.

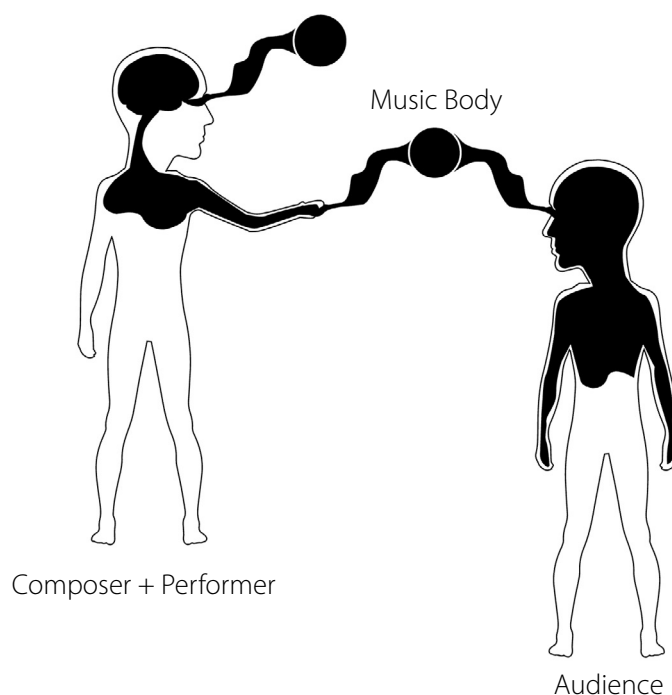
The Noted Anatomist, <https://www.youtube.com/watch?v=Zgqfky1rjkm>, 2015
<<https://www.youtube.com/watch?v=zGqfKY1rjkm>> [Accessed 21 March 2019].

Braconnot Paula, Ghost In The Machine, 2013 <<http://thecuriousbrain.com/?p=41201>> [Accessed 21 March 2019].

REPRODUCTIVE PROCESS

The sounding material is only a conduit for transmitting “inner musical excitations” of the creator to the receiver. Musical listening, in turn, begins when the listener apprehends the composer’s tonal imaginings and contributes his or her own mental processes through a “reproductive process” [1]

In the article studying Ernst Kurth, a Swiss music theorist of Austrian origin, it states that Ernst Kurth’s treats the experience of composing and listening to music together as a reproductive process. This can also be understood with the concepts of affect and affection. Musician Michael Tilson Thomas, states in his Ted talk that “even the most ambitious masterpiece can have its central mission to bring you back to a fragile and personal moment. He elaborates on the Beethoven Symphony no. 5 that the great piece express Beethoven’s mental state of Sorrow and Anger, and final transform into joy. [2] It can be understood as that the mental state, or the affection possessed by Beethoven are captured and transformed into the language of music, which is a body now possessing Beethoven’s affection. When we listen to the music, the our bodies recaptures the affection and our body muscles react. The inner excitation of the composer is transferred to the audience through the musical bodies.



1. D. Tan, *Ernst Kurth at the Boundary of Music Theory and Psychology* (University of Rochester, 2013), p. 55
2. TED. “Michael Tilson Thomas: Music and Emotion through Time.” YouTube, 7 May 2012 <www.youtube.com/watch?v=FD5Z-Ki-moMU&t=919s> accessed 20 March 2019.

ARCHITECTURE & EXPRESSION

Relationship can be drawn between architecture and a human face, with two formalization. Faces are formed from different physical organs, each serve specific function, like eye to see, mouth to see, ears to hear. In architecture, different building parts are oriented specifically serves different activities. At the same time, different facial organs are united to form particular facial expression, which reflecting the mental state of a person in particular time, and also as a mean to transmit the message to others with or without intentions. If a human face can do so, it is very likely that architecture can be also treated as an expression.

In additional, architecture is not temporary like an facial expression bearing certain emotions within certain time. Pallasmaa states that "architecture reflects, materializes and externalizes ideas and images of idea life". [1] Combining with the previous parts, I would understand architecture as an frozen expression. It stores and reflects the state within its life time. It is a memory of the previous happenings, the previous energy flow which contributes its form.

	Music	Facial	Architecture
Duration of State	Temporary	Temporary	Eternalised.
Tangibleness	Immaterial	Muscles	Material
Relationship to other body	Embodiment	Image	Embodiment

1. Juhani Pallasmaa, *The Eyes of the Skin* (Chichester: Wiley, 2012), p. 76.

EMPATHY

For music, its effect on our body is more direct as the vibration is bombarding our eardrums. Why an facial expression can be triggering our own emotions? The expression is created from the force acting on the facial muscles of other people. The force is not directly acting on the receiver. Why we can receive the affects from the expression? Not even human, we can somehow feel the motionless form or object as stated in the following paragraph.

I transpose myself into the inner being of the object and then explore its formal character from within as it were. This kind of transposition can take a motor or sensitive form even when it is concerned with lifeless and motionless forms. [1]

This effect is known as empathy, originated from the German word *einfühlung*. [2] In the article *Architecture and Empathy*, in the section by Harry Francis Mallgrave, he relates empathy to our human body and states that "human empathy possesses deep evolutionary, biochemical, and neurological underpinnings, which activate the cortical and limbic areas, brainstem, autonomic nervous and endocrine systems." [3] In the section of Pallasmaa. He suggests that imagination is not only as a formal and geometrical image, but "evokes embodied and emotive experiences, qualities, and moods." [4]

Imagination is not a quasivisual projection; we imagine through our entire embodied existence and through imagination we expand our realm of being. [5]

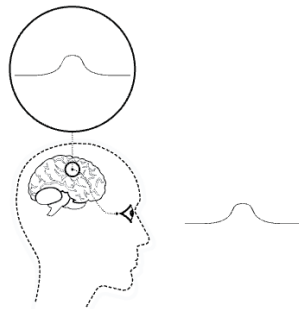
My the same chapter of my research, it is suggested that any body and sensation can be understood in terms of energy, which is wave in nature, penetrating and acting on the skin. As the imaginary action can also be understood as energy acting on the imaginary body, the energy synchronize with our embodied energy that we attain certain feelings or emotions.

-
1. Robert Vischer, "The Aesthetic Act and Pure Form," in Charles Harrison, Paul J. Wood and Jason Gaiger, *Art in Theory, 1815-1900* (Oxford: WileyBlackwell, 1998), 692. (Page 41).
 2. Gallese, Vittorio & Pallasmaa, Juhani & Mallgrave, Harry & Robinson, Sarah. (2015). *Architecture and Empathy* <https://www.researchgate.net/publication/292783014_Architecture_and_Empathy> [accessed 21 March 2019] p. 69.
 3. *Ibid.*, p.33.
 4. *Ibid.*, p.8.
 5. *Ibid.*

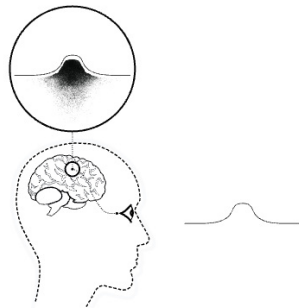
Architectural body skin



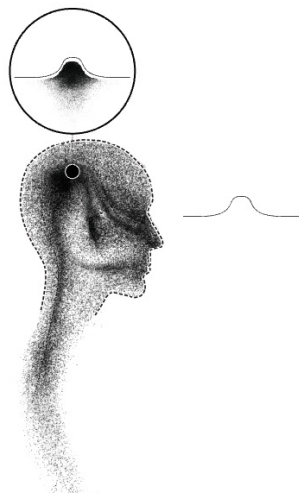
Form attributes to certain action on the skin



Human perceive the form



Imagination of action on architectural body



Energy synchronize with human body energy

FORM, MATTER & MEMORY

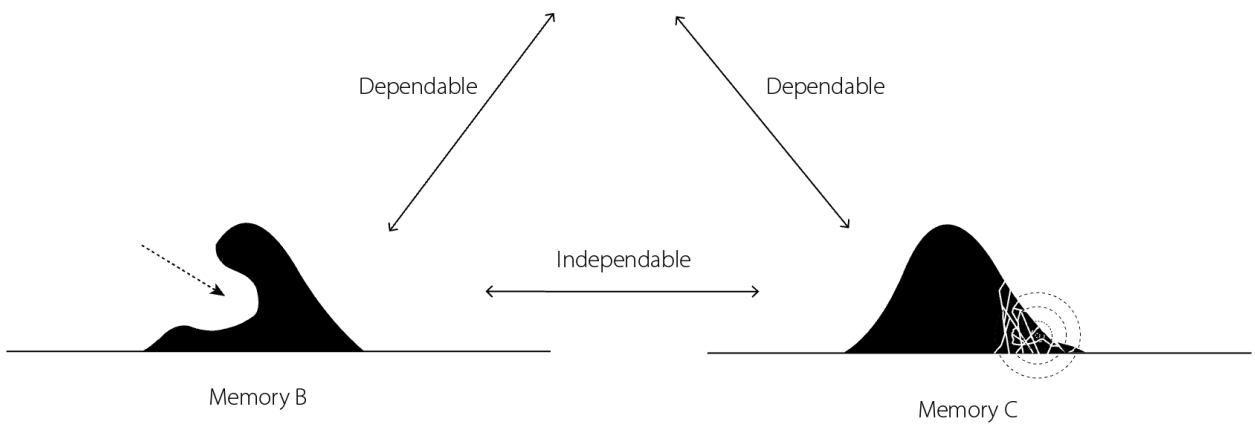
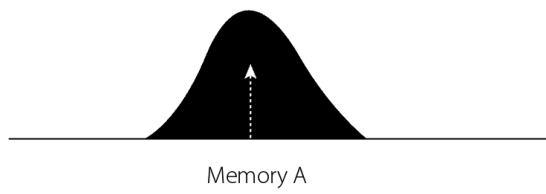
As formation is linked to force or the happenings. It can be understood as positive in all time. Even deterioration is a kind of happenings. However, in terms of perceivable changes of matter, it can be positive (adding matter), negative (reducing matter), or even decomposition (broken down into smaller matter). This is the fundamental difference between music and architecture. Although both arts are dealing with formation, architecture also deals with tangible matter.

Secondly, for music body, it is temporarily under formation when we are experiencing it. Our eardrums are temporarily being bombarded by the vibrations. For architecture body, the formation was happening not at the same moment when we are experiencing it. What we are experiencing, perceiving, are the memories of the formation, the previous presence, memorized by the materials.

Memories can be recalled at the same time, regardless of the historical sequence. There are two situation:

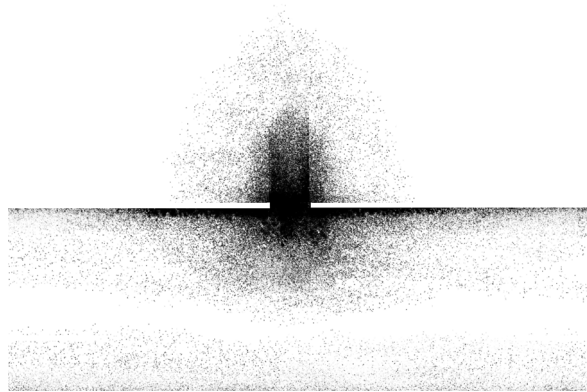
- Two memories are dependent on each other when the two force are acting on the same location. It usually happens they involves different scales. There is a hierarchy of scale.
- Two memories are independent on each other as the two force are not acting on the same location.

The role of scale is to determine whether the two memories are comparable. Consider a man crafting a cave and an ant crafting a hole in two different location. As the size difference is too large, it is hardly comparable.





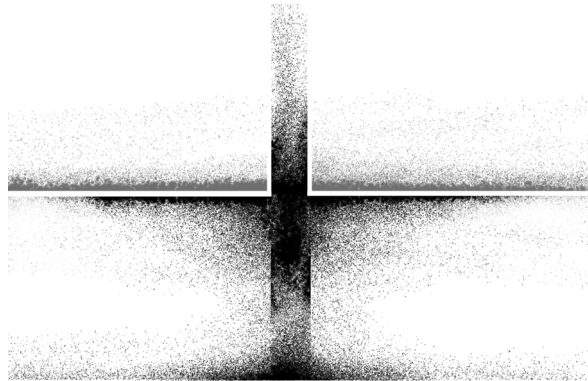
My modification on the photo of Lluvia de Luz Templo de Karnak



The above drawing is the visualization of force acting in order to create the form of the space. The hole can be understood as the result of the penetrating of positive space in the previous moment. As the form is already created, we can not witness the creating process. However, we can perceive and imagine the "happenings in the previous presence". The happenings can be understood as the memories externalized by this form.



Lluvia de Luz Templo de Karnak < https://ello.co/okamika/post/fa5qoxf8_jvoa9hg0q-c0ya > [Accessed 21 March 2019]

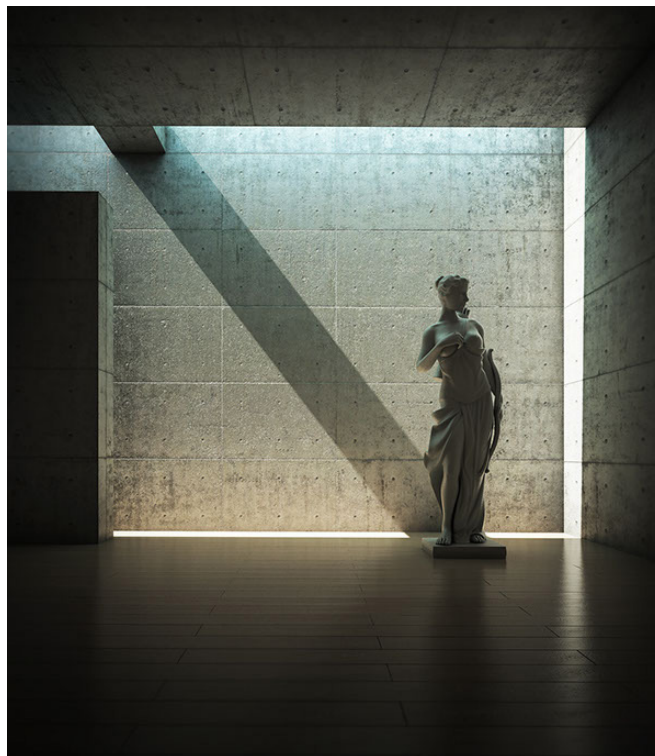


On top of the memories, there can be real temporary happening at the same moment we experience the architecture. The two forces can be merge together to create an unified affects. It can also explain why in this case the space is more appealing than the one without the light.

ARCHITECTURE AS THEATRICAL MAKING

Architecture can be understood as not only to put object in certain form together, but actually an arrangement of different happenings together. Steen Eiler Rasmussen gives a good point in his writing about experiencing architecture. He analogies architect to an theatrical producer that architecture is to plan the setting for people's lives. In terms of living, he said that architecture does not only provide a volume for the accommodation of guests, but also offering the comfort, the subjective effects. Architecture is to offer experience.

The architect is a sort of theatrical producer, the man who plans the setting for our lives. Innumerable circumstances are dependent on he way he arranges this setting for us. When his intentions succeed, he is like the perfect host who provides every comfort for his guests so that living with him is a happy experience. [1]



Tadao Ando, Koshino House (Ashiya-shi, Japan, 1984). Photo Gul Kilic

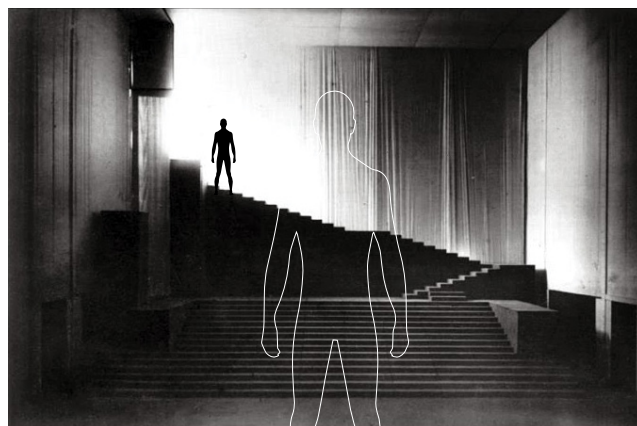
IMMERSIVE SCENES

Adolphe Appia, a Swiss architect and theorist of stage lighting, holds views in preparing for scenes in theatrical setting which is inspiring for architectural design. He wrote the statement suggesting "We must no longer try to create the illusion of a forest; but instead the illusion of a man in the atmosphere of a forest.", regarding the act Siegfried by Richard Wagner. Under the influence of Adolphe Appia, a planar painting background scene at the stage are replaced with three-dimensional elements like steps, ramps, platforms. Under the effect of the light, all the visual elements fuse into a unified whole. Further more, the elements are "suggestive" in nature, which direct the movement of the acts. [1]

He also wrote the following paragraph, addressing the importance of embodiment.

"Lighting is an element in itself whose effects are limitless... No longer does the actor walk in front of painted shadows and highlights; he is plunged into an atmosphere that is uniquely his own." [2]

Adolphe Appia's view on theatrical setting reinforces Rasmussen's that architecture is about the setting up an atmospheric settings embodying the people. However, experiencing architecture is different from watching a theatrical drama. In an architecture, the visitor are both acting as the actor and the audience. As an audience, he is witnessing the former visitor in certain setting. As a actor, he himself is involving in the whole setting, while being witnessed by other audiences.



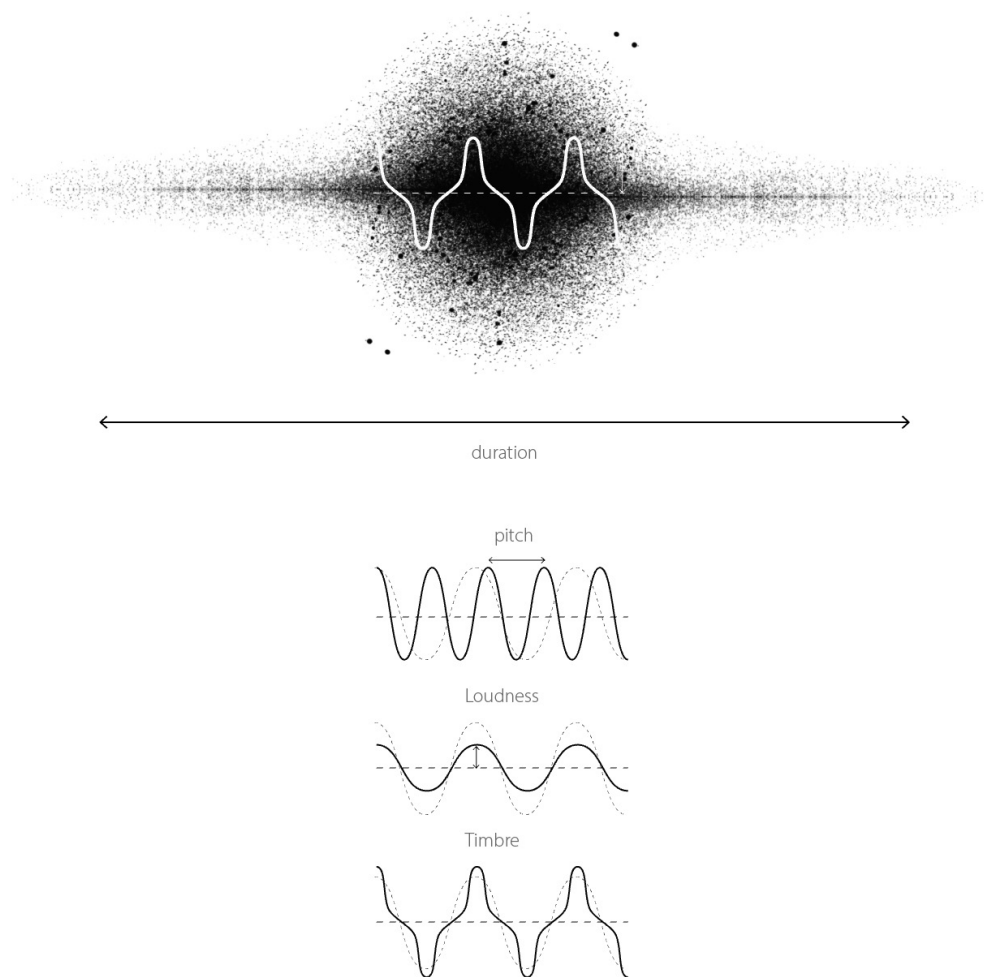
My illustration on Adolphe's work
Adolphe Appia, Design For Gluck's Orfeo, 1912.

-
1. Dr. Jack. The Modern Era III: Independent Theatre Movement, Designers Appia & Craig (2013) < <https://heironimohrkach.blogspot.com/2013/12/the-modern-era-iii-independent-theatre.html> > accessed 20 March 2019.
 2. *ibid.*

QUALITY OF SOUND

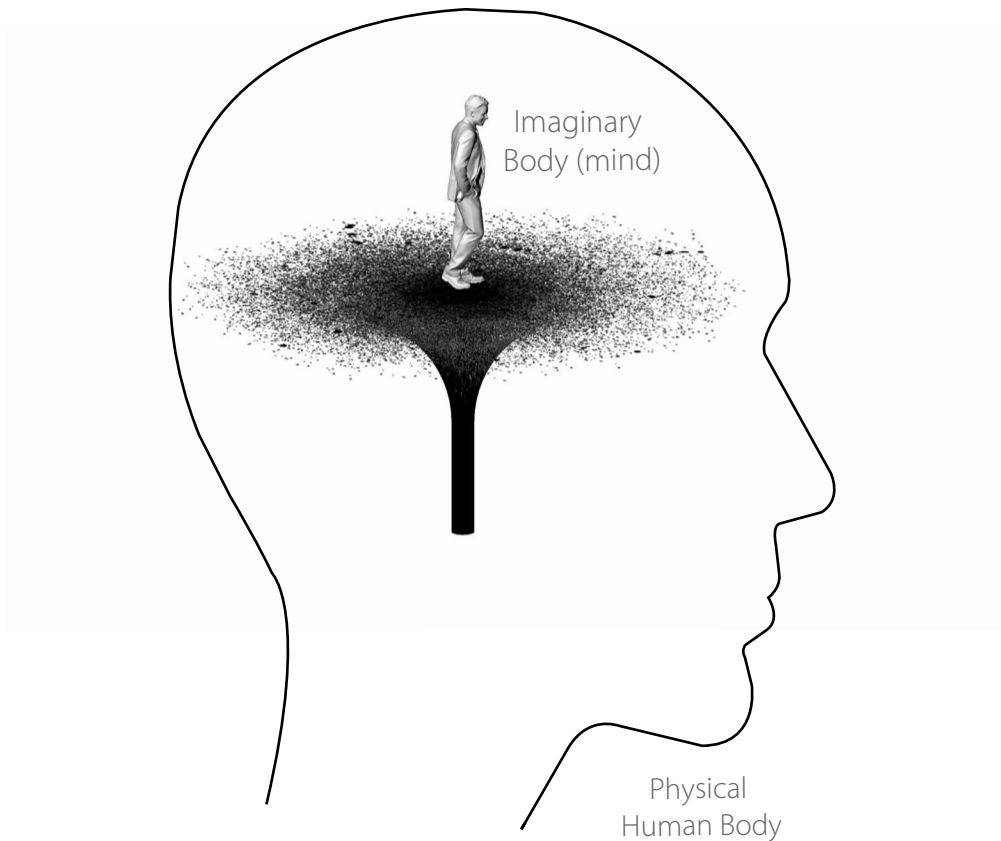
Each sound possesses particular quality that we can perceive the quality in mainly three different ways. It needs to be understood that these are just aspect to analyze the quality of the sound. They are not separable from each other. The duration of a sound is As Delueze put it "a duration only exists in being determined by a tonic accent, controlled by intensities" in the book *Difference and Repetition*. [1] The duration or the lifetime for one sound body is the duration all its qualities are the same. For example, if the loudness is constant, but the pitch changes, then it is already perceived as another sound body.

- Loudness - amplitude of the wave
- Pitch - frequency of the wave
- Timbre - combination of overlapping waves



PITCH AS HEIGHT LEVEL

Although the pitch is attributing to the frequency of the wave, it is perceived always in "high" or "low". Higher the frequency, higher the pitch. The classical musical score assigns different vertical position to wave with different frequency. It provides us a hints how to understand the pitch in terms of physical body. The line can be understood as the plane of perceiving height.





The World's Deepest Cave Dive Miller's Cave, 2014 <https://huckberry.com/journal/posts/the-wold-s-deepest-cave-dive?utm_source=MadMimi&utm_medium=email&utm_content=Get+Ready+to+Rumpl&utm_campaign=20140916_m122172731_Get+Ready+to+Rumpl&utm_term=413_jpg_3F1410805515> [Accessed 21 March 2019].

This pair of photos is to illustrate the pitch is a relative concept, dependent on which height the person is currently located at.



Michael Heizer, North, East, South, West (New York: Dia: Beacon, 1967). Photo: To Vinetz. Courtesy Dia Art Foundation.

This artwork can be understood as a musical note, imposing emotions on human. First because it is sunken, a force can be understood as driving one downwards. Secondly, and because of its dark color, absorbing light. It is hard for one to clearly perceive how deep is the space. People will imagine the depth. The process of imagination with the mind will strengthen the affection, so the effect is greater.

LOUDNESS AS HEAVINESS

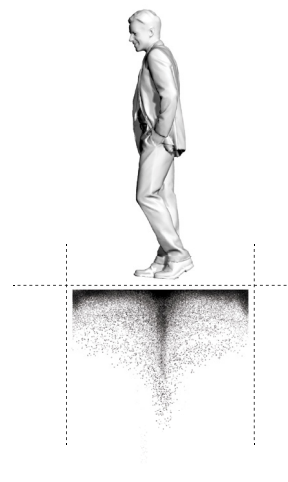
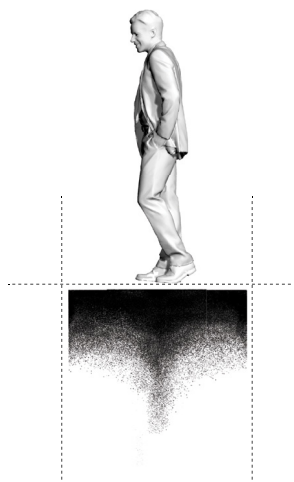
As loudness can also be understood as the density of energy acting on a surface at one intensity. Below certain level, it is too small to hear. The unperceivable bodies can be said to be "non-existent" relatively to human beings. The loudness can be understood in form of heaviness. It can be easily shown in diagrams. More intense the energy hitting a surface, more heavy it feels. When we perceive a form is more heavy or light, it is actually we are perceiving how intense is energy.



Park Modern: Panel formed, site poured concrete
<<http://blog.buildllc.com/2014/11/a-visual-guide-to-stairs/>> [Accessed 21 March 2019].

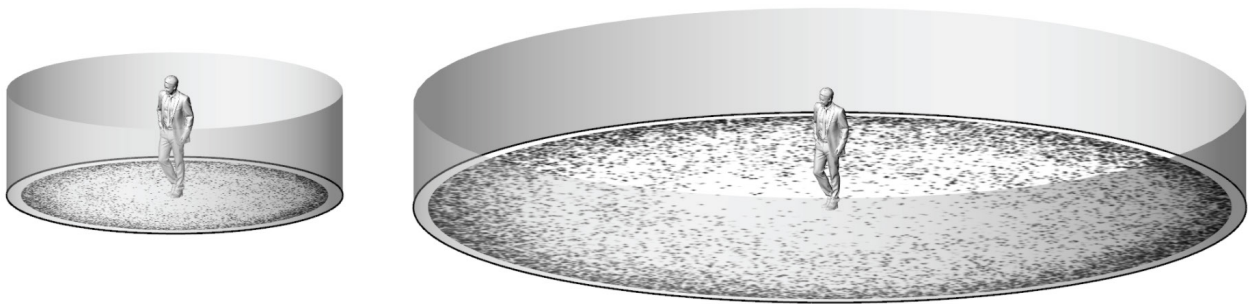


Guillaume Gillet, 1954-1969. Église Notre-Dame
Photo:



LOUDNESS AS SIZE

The loudness can also be understood in form of scale or depth. If the intensity acting on the surface is constant, larger the surface area, more energy are acting on the surface. It can also be understood as the distance of the surface pushed away by the positive space.

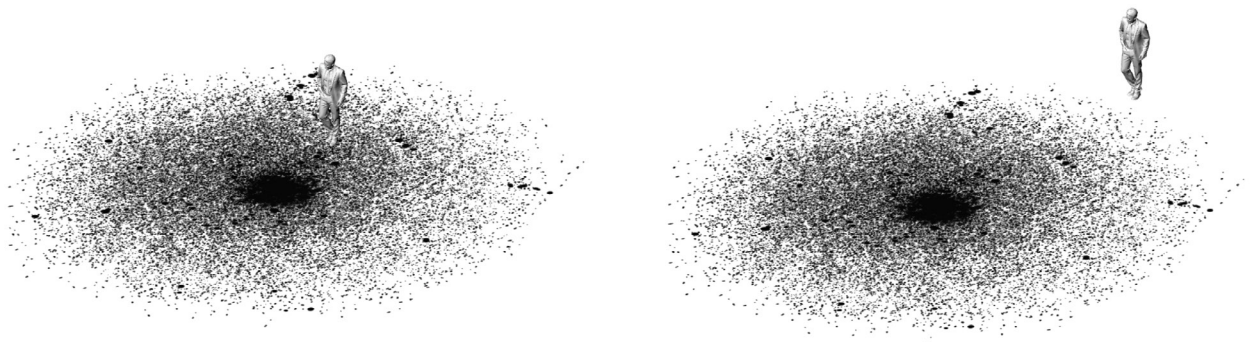


LOUDNESS AS CLOSENESS

Closer a people is to the object or event, more he receives the impact from that thing. In the below figure, the hanging lighting is very close to the people that it is dominating the vision of the people.

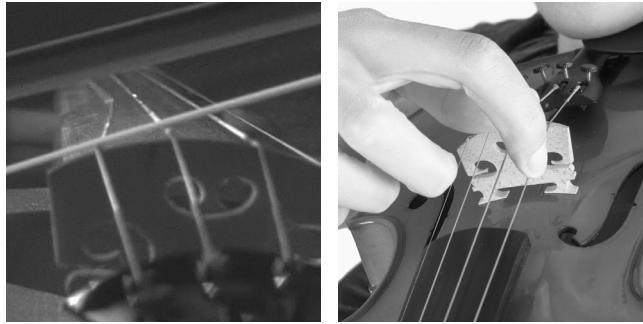


Hagia Sophia (Istanbul, Turkey, 537 AD).



VARIATION OF LOUDNESS

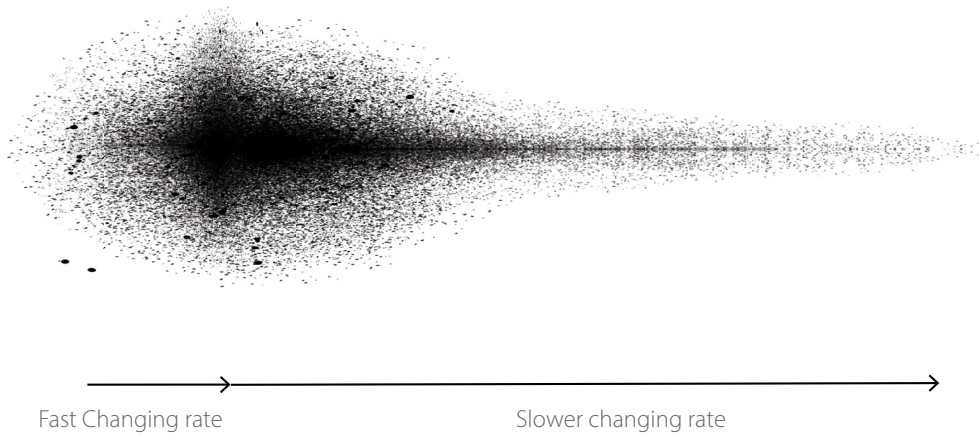
To produce a vibration, one needs to provide the energy input to certain intensity so that we can perceive a sound. The rate of the energy input depends on the structure of the musical instrument, hence creating variation of intensity, and eventually affects the quality of the sound we sense. For example, strings can be bowed or plucked. For bowing, it can be a long lasting process with energy continuously being input. The energy input is controlled by the bow. While for plucking, the vibration will be triggered by the finger at the start and starts fading out. For percussion, the increase of the energy will be in a much shorter period of time. The sharpness is affected by the speed of the energy flow.



(left) The Helmholtz corner traveling back and forth along the string, < <http://www.wikiwand.com/en/Violin>> [Accessed 21 March 2019].

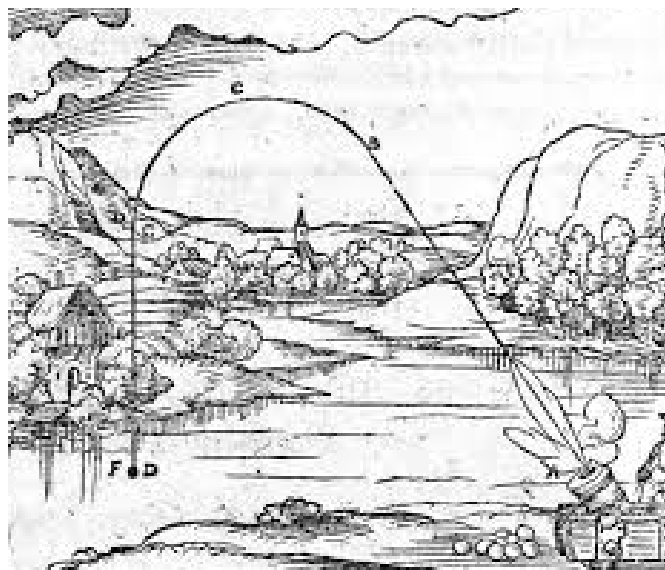
(right) Pizzicato: How to play Violin. < <http://www.learntoplaymusic.com/blog/pizzicato-play-violin/>> [Accessed 21 March 2019].

Change of vibration intensity of string under the plucking:

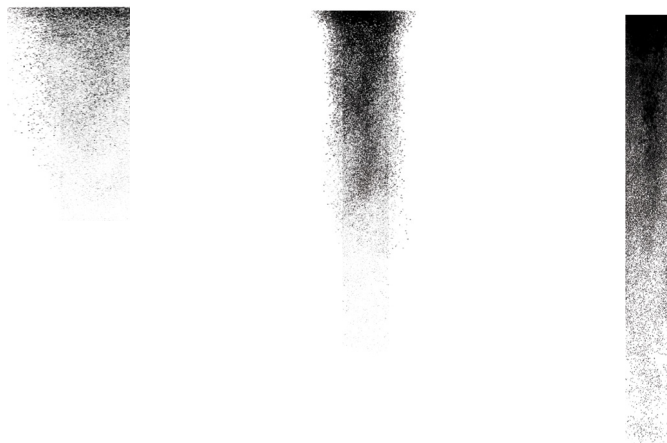


DEFLECTION OF FLOW

In physics, kinetic energy of an object can be associated with how fast it moves. It suggests that greater the force towards certain direction, faster the energy flow. The positive space, as energy flowing, can have different flowing speed. Slower the energy flow, it is easier to be diffused or deflected by other gravitational sources, and diffuses towards other direction, so it is visualized as not so concentrated.

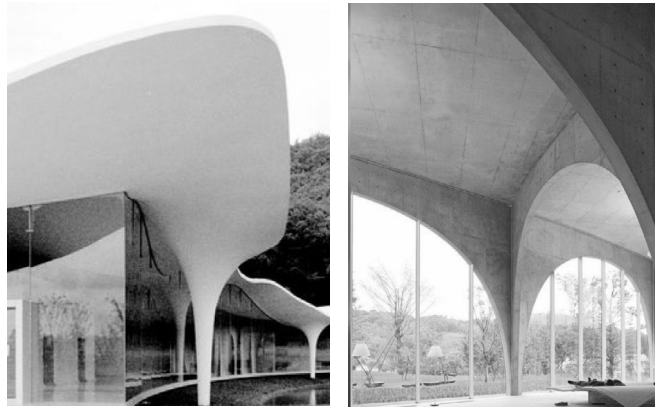


Projectile motion against gravity <https://wikivividly.com/wiki/Jean_Buridan> [Accessed 21 March 2019]



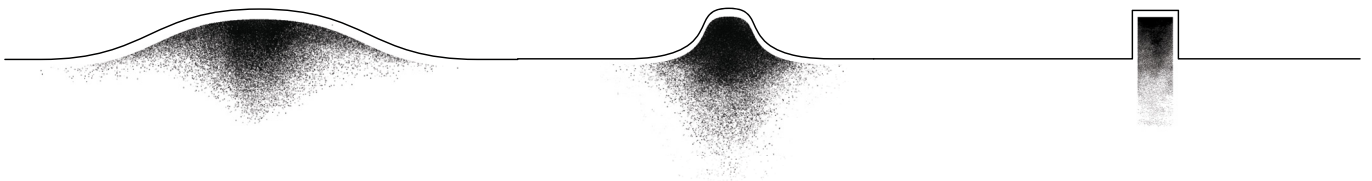
FLOWING SPEED & HARDNESS

The form memories and reflects the state of motion acting on it, regardless of its material. If a service is hit by a speedy flow, it is likely to make an sharp turning. If the surface is hit by slower energy flow, it is likely to distribute and spread the energy along the surface, creating a smoother turning. As our mind subconsciously empathizing the architectural body to our own body, we sense the flow of energy, leading to the phenomenon that we perceive certain form "softer" and some form "harder" can be explained.



(left) Toyo Ito, Meiso No Mori Municipal Funeral Hall (Kakamigahara, Japan, 2006).

(Right) Toyo Ito, Tama Art University Library (Tokyo, Japan, 2007).



TIMBRE AS MATERIAL TEXTURE

Timbre can be understood as the texture of the sound. It is the timbre of the sound distinguishes itself from other sound with the same pitch and loudness. Sounds created from different musical instruments introduce different feelings. Musicology identify six basic types of musical instrument: membranes, strings, struck, metallic, air and electronic. [1] Each type of instrument produces sounds with particular properties. The research is not looking into the difference properties, but how we can look into timbre in terms of energy flow.

Timbre can be understood as a result of mixing of different sound wave to form a new sound wave. It can be understood as the properties of the material in architecture, yet it is not the focus of this research.

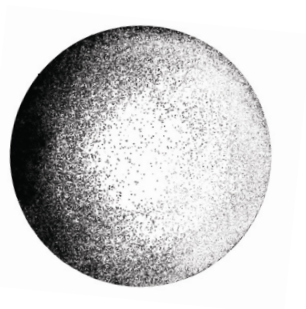
LIGHT AS FLOW

Light can be understood as Luminance, which is the amount of luminous flux per unit area. It can also be understood as the intensity created from the energy flow on a surface, which is the sound. Higher the illuminance, can be understood as louder the sound. The illuminance have two effects in our sensation of a space.

- With the lightness and darkness gradient, it helps us to perceive the material form
- It suggests the direction of the light and whether it is direct light or diffuse light coming from different direction. The direction of the light depends on the scale of the light source. For diffuse light, the light is not concentrated to one direction, but spread out to different direction.

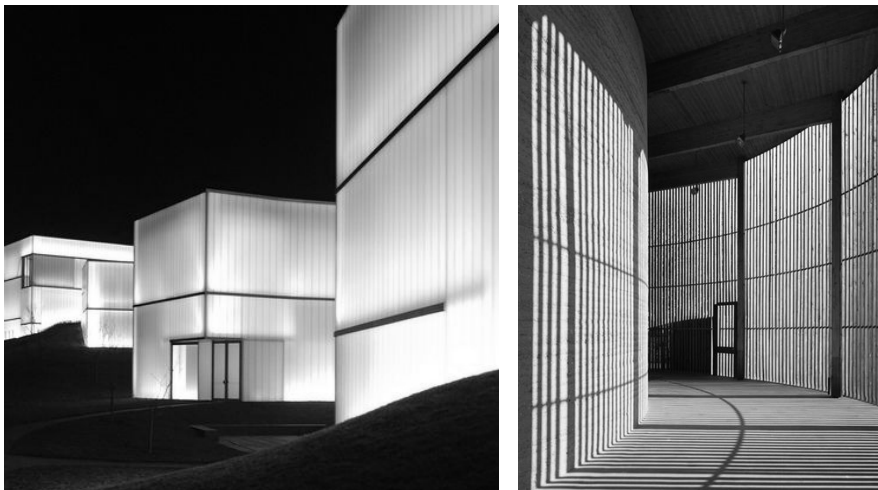


Cave in Cappadocia



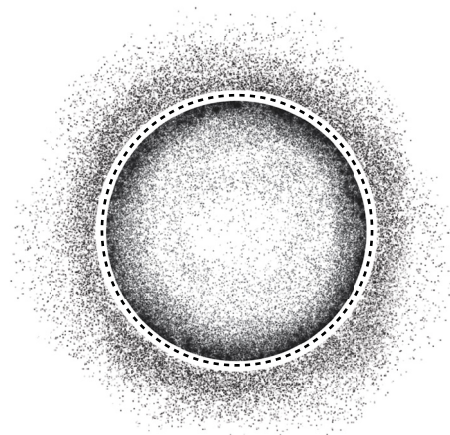
FLOW & POROSITY

The transparency or porosity of a space in architecture can also be illustrated with the concept of energy flow. The flow penetrating the surface can be light or positive space. If the energy penetrates the surface, less energy is accumulated on the surface of the membrane, which implies lower intensity. The surface will feel more "light" .



(Left) Steven Holl, Nelson Atkins Museum (Kansas City, Kansas, 2007).

(Right) Reitermann And Sassenroth, Chapel of Reconciliation (Berlin, 2000).

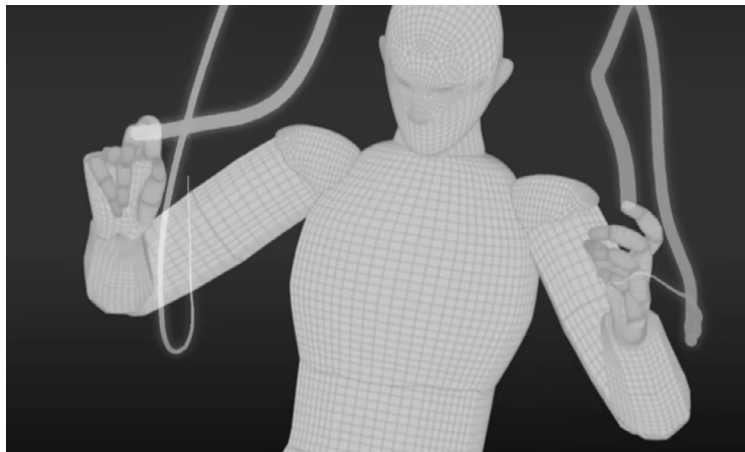


Section III
- Synthesis -

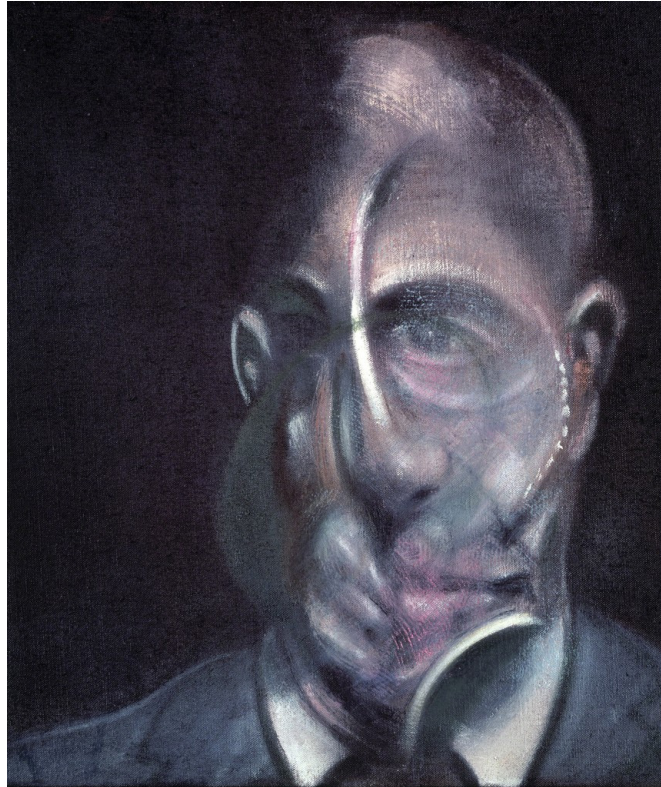
COMPOSE BY DIRECTING

Music is different from soundscape, or eventscape. For soundscape, they are different sound occurring at the same moment. It is not necessarily relationships between two sounds, or two events. They are just there by occasion. They are not united to form one bigger sound. Sounds are only fragments of the whole scene.

In the playing of music or drama, there are directors or conductors. They are so-called "director" or "conductor" as they are really directing or conducting something. From the previous section, it can be understood that they are conducting or directing the energy flow. Their role is different from the musical player who provides the energy for sound vibrations. Ernst Kurth also treats music as a "composer's creative psychic stirrings". [1] Artwork is not only an render visible of invisible, but also directs the flow of the invisible energy flow. It is why artwork is both an instinct and intellectual process. Instinct is about the energy flow, while intellectual is about how to direct the flow.



The New York Times. "Demystifying Conducting: The Connection Between Gesture and Music | The New York Times" YouTube, YouTube, 4 Jan. 2013. <<https://www.youtube.com/watch?v=hGwhmjnGOY>> accessed 20 March 2019. Video clip of conducting.



Francis Bacon, Portrait Of Michel Leiris (Paris: Musée National d'Art Moderne, 1976).

In this drawing by Francis Bacon, three steps are identified.

First he drew recognizable figures and objects which is a human figure. It can be understood as an object. What he did next, was introducing chaotic strokes and deforming the "good form". The deformation itself, is a sound, is a action, a spark which visualize the energy. The next thing he did was, based on the first stroke, develops the compositions. This step is the process of directing the energy flow. With the second and the third steps, the painting stirs our emotion. [1]



Nick Veasey, X-ray photograph of a plant.

*"Artist is nothing more than a tree trunk through which sap rises,
but the fruit the tree bears is something no one has ever seen before."
[1]*

-Paul Klee

CONTRAST

Experience a series of identical things will lead to monotonous and boring feelings. Music is not replicating a single sound body. Music does not work like words, each bearing a meaning. Music can only deliver idea through contrasting, a concept of relativity. Ernst Kurth considers the relationship between two music notes as a change, a transition.

Rather than referring to the space between two tones as an "interval," Kurth suggests that an expression like "transition" (Übergang), which suggests momentum and motion [1]

Origin from:

Streng genommen wäre daher statt des Wortes ‚Zwischenraum‘ ein Ausdruck wie ‚Übergang‘ oder sonst einer, der das Bewegungsmoment enthält, treffender gewesen [2]

Furthermore, the concept of contrasting is brought up in the book *The elements of music - melody, rhythm & harmony* that "the components of epigrams are often synthesized or unified through paradox, an essential quality for having an aesthetic response and remembering the phrase." The following are the paradox examples. [3]

- Pitch - higher or lower
- Loudness - louder or softer
- Texture - smoother or more jagged
- Duration - longer or shorter
- Degree of harmony - consonant or dissonant
- Direction - rising or falling
- Complexity - simple or complex

The comparative use of words, for example, instead of "high" or "low" pitch, but "higher or lower", is to highlight the concept of transition, a change from previous state to present state.

Pitch, Loudness and texture is the qualities confined to the individual body. The contrast of qualities can be done by juxtaposition of two different individual body together. Contrast can be in terms of a instant sharp change or a gradual, elastic change, in relationship to the sequence people experiencing the body.

Other qualities are not only confined to a single body, but exists among two or more bodies. They need to be addressed together in a bigger picture.

1. D. Tan, Ernst Kurth at the Boundary of Music Theory and Psychology (University of Rochester, 2013), p. 129.
2. Ernst Kurth, Musikpsychologie (Berlin: M. Hesse, 1931), p. 132.
3. Jason Martineau, The Elements of Music: Melody, Rhythm & Harmony (Glastonbury: Wooden, 2008), p. 4-5.



Ra Paulette, Hand-Carved Caves (New Mexico: 1990).

Ra Paulette, a cave digging artist, says the following in an interview, highlighting the importance of contrast.

“It has a lot to do with the juxtaposition of opposites: the sense of being underground with the light streaming in; the intimacy of being in a cave, yet the columns end up very large, sometimes thirty to forty feet high.” [1]

1. CBS Sunday Morning, “Cave-digging artist finds inspiration underground.” YouTube, 21 Dec. 2014, <<https://www.youtube.com/watch?v=oxcftj39BU&t=147s>> accessed 20 March 2019.



Steven Holl, Watercolor of the Kiasma Museum of Contemporary Art (Helsinki, Finland)

It is a spatial manifesto drawing by Steven hall. In this space, the changes of spatial quality in relating to the movement sequence of people is in a gradual change. For example, the ramp indicates change of level from low to high gradually in a slow rate. Also, along the ramp up, the distance between the wall are getting smaller and smaller.

ORDER & LIFE

Music, is a path to beauty. Even for sad theme, it is intriguing to human. In music, the energy flow is directed in certain way, and gives beautiful form. It can be deduced that only certain form can give certain feelings. What is the last piece of puzzles for beauty? Christopher Alexander 's book the phenomenon of life can provide inspiration for the answer. In his view point, he thinks that many forms created in architecture are against life, image-ridden and hollow. [1] He is pursuing architecture which is authentic, and based on real nature of human feelings. The underlying concept for his view is the term "order".

Here is what he states in the book.

" The order itself - which exists in a leaf, in the shrine, in the yellow tower, or in a Mozart symphony, or in a beautiful tea bowl - a harmonious coherence which fills us and touches us - this order cannot be represented as a mechanism " [2]

According to this paragraph, it can be understood that:

- Order exist, but very hard to define
- It exists with or without matter. Based on the previous sessions that formation and matter are two concepts. It can be deduced that order is not directly concerning matter, but is related to the form.
- It is an inherent harmonious coherence. The words "harmonious" and "coherence" implies that more than one bodies are concerned in the order.

Further more, Alexander also points out that "life" is not a limited biological machines, but also can understood as an inherent quality found in anything which possesses form, even for space and bricks. He draws relationship between "life" and "order" in the phrase "every form of "order" has some degree of "life". [3] I will understand "life" as certain "state" possessed and expressed by a body. A body which consists of smaller bodies in harmonious coherence.

1. Christopher Alexander, *The Phenomenon of Life: An Essay on the Art of Building and the Nature of the Universe* (Berkeley, Calif.: Center for Environmental Structure, 2002), p. 6.
2. *ibid.*, p.15.
3. *ibid.*, p.28.

WHOLENESS

Alexander suggests that the state "life" is inseparable with the concept of "wholeness", which is one of the main themes of contemporary thoughts and can be found in many fields such as physics, biology, cosmology... . Instead of treating wholeness as a common characteristic found in different fields. [1] I will understand in the way that it is we, human beings, who specify on different paths to explore the nature, the universe, which itself is originally a wholeness of all things.

According to Alexander, the local parts exist in relation to the whole and their existence are mutually dependent on each other. [2] The larger whole and the elements' behavior are mutually affecting each other. A clear example is that our human bodies are made up of cells, which also possess bodies. If we train our bodies in gymnastics, more cells will be created that our muscles grow, and eventually our whole body grows. The wholeness can also be understood as unbroken and undivided. It is because bodies can be understood in term of energy stored and flowed through. Base on the wave nature of energy, it cannot be divided.

Order can be understood as the harmonious relationship of how different bodies co-exists and constituting to a larger bodies. If sound can be understood as a body, then music is the larger body composed of sound body. This analogy is also ensured by the original definition of the word "composition" - which means "assembly" - the Latin equivalent of the Greek 'synthesis'.

Das Wort, Komposition ("Zusammensetzung", lateinisch genau gleichbedeutend mit dem griechischen "Synthesis") [3]

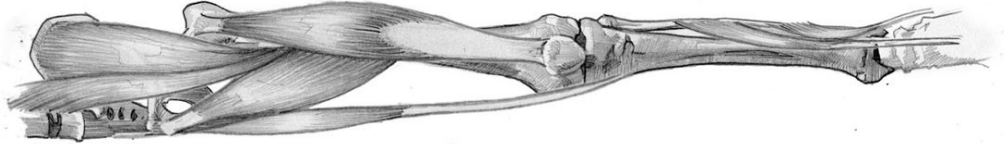
Ernst Kurth, holds view that aligns with the idea of wholeness in terms of energy flow in music. It can be seen from this statement that "only dilettantes assemble together details, the true compositional talent masters substantial unified motions in a kind of broad comprehensiveness; towards their consolidation." [4]

To understand Melody, we need to understand Rhythm and Tonality, which are two ways to address the order. Both are directing the tendency of the energy flow in relationship to a bigger whole.

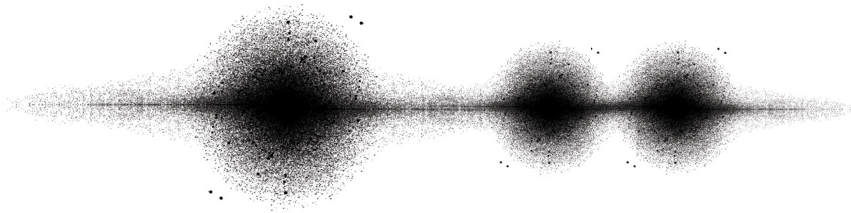
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1. Christopher Alexander, *The Phenomenon of Life: An Essay on the Art of Building and the Nature of the Universe* (Berkeley, Calif.: Center for Environmental Structure, 2002), p. 80.
 2. *ibid.*
 3. Ernst Kurth, *Musikpsychologie* (Berlin: M. Hesse, 1931), p. 33.
 4. D. Tan, *Ernst Kurth at the Boundary of Music Theory and Psychology* (University of Rochester, 2013), p. 54.

CHAPTER VII

Both the human bodies and musical bodies are the synthesis of smaller bodies, the muscles and the sound. What is different is the arrangement of the time. For music bodies, one sound excels, ends its life and pass the energy for synthesis of another sound body. It is always a passage of energy linearly throughout the time. For the human, all the muscles are in a parallel growing state. It can understood as different muscle bodies excel at the same moment, whole the arm is a bigger scale bodies.

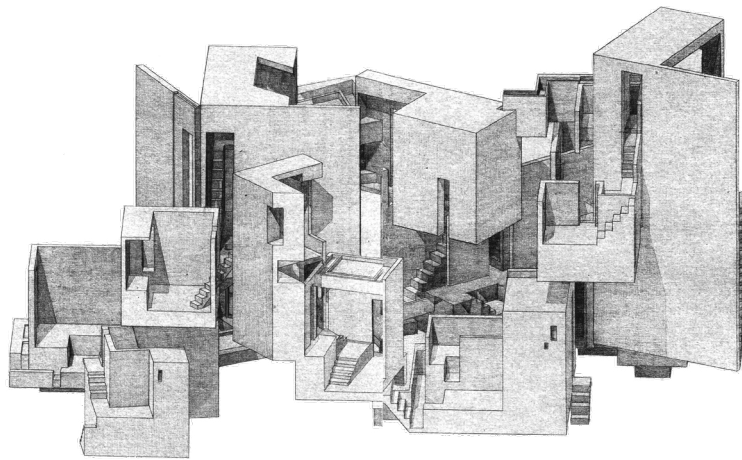


Sketch from E.M. Gist
< [Http://anatoref.tumblr.com/post/128708560256/em-gist](http://anatoref.tumblr.com/post/128708560256/em-gist) > [Accessed 21 March 2019]



CHAPTER VII

An architecture body possesses the quality of both. From the previous part, it is understood that form of a body are is from energy flow. Within one body, People is experiencing the energy flow at the single moment. At the same time when people is walking within the architecture body as a whole, he is experiencing smaller bodies in sequence.



Conceptual Diagram from the book 如畫觀法 by 王欣, p. 62-63.

RHYTHM

Olivier Messiaen, a French composer, highlights the concept of rhythm in a lecture at the "Conference de Bruxelles" in 1958 as follows. [1]

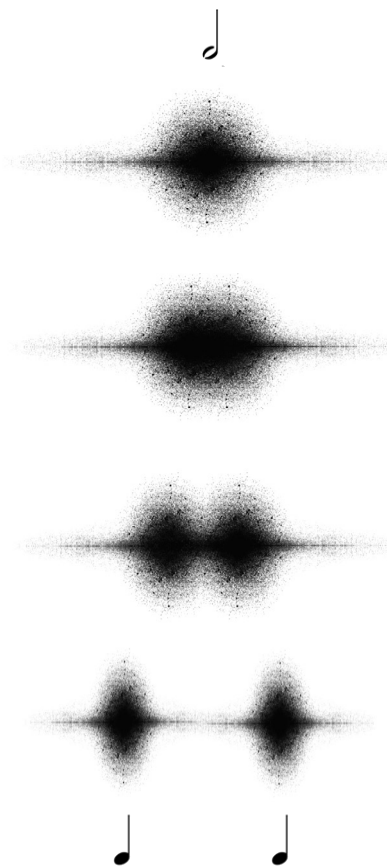
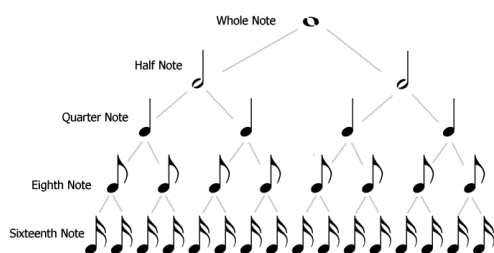
Suppose that there were a single beat in all the universe . One beat ; with eternity before it and eternity after it . A before and an after . That is the birth of time . Imagine then , almost immediately , a second beat . Since any beat is prolonged by the silence which follows it , the second beat will be longer than the first . Another number , another duration . That is the birth of Rhythm.

Two things can be highlighted. First, rhythm exists with the presence of beats. The concept of beat can be understood similarly as the "heartbeat". As mentioned in section II Chapter III, it is the systole and diastole which creating the energy fluctuation, and eventually a self-shaping formation process. Secondly, rhythm exists not on one beat, but in-between different beats, which has different duration of time. It is elaborated as "Rhythm is born of moments of intensity , incommensurable accents that create unequal extensions of duration." stated similar section of the book. Rhythm is the order addresses the fluctuation of energy, redistributing the energy on the bodies.

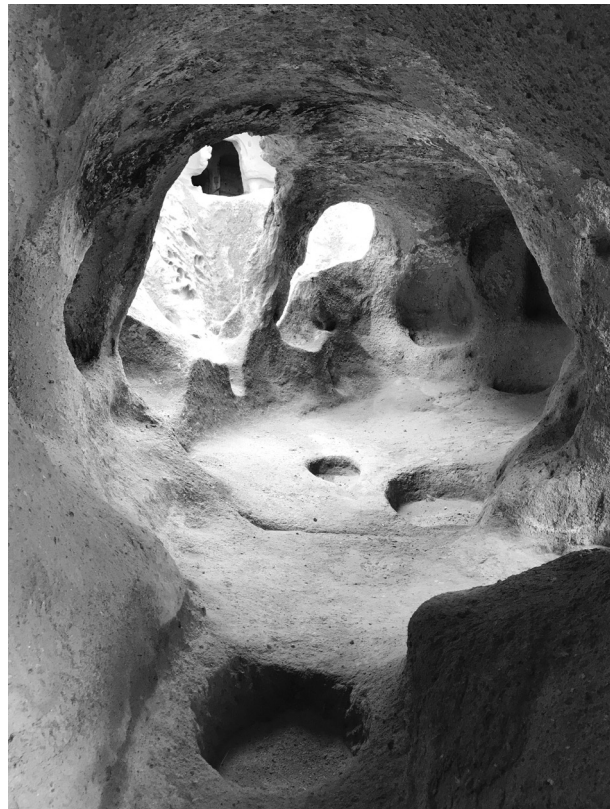
1. Ronald Bogue, *Deleuze on Music, Painting, and the Arts*, 2017, p. 25
2. Robert Sherlaw Johnson, *Messiaen* (Berkeley, Calif.: University of California Press, 1975), p. 32.

RHYTHM - DEVISION

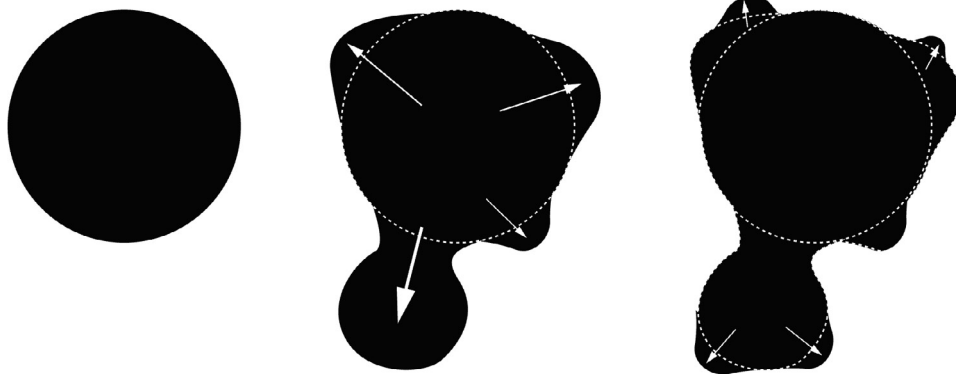
For a music note, it has different duration. For example, the duration for a whole note is equal to four times the duration of a quarter note. As rhythm is the order to addresses the relationship between different notes with different duration, it can be understood as a splitting or dividing process of a body to bodies, or a fusion of bodies into a bigger body. The process is the redistribution within a body to reproduce new bodies. As, each note, is only a bunch of vibrating energy, it should be aware that the idea of dividing is not to "chop" an object into different parts, but a dynamic redistributing of energy. Different from the notation of classical music which distinct notes are created, there are situations that it is hard to tell whether the complex should be perceived as one or more bodies.



The following photo shows a cave architecture in Cappadocia, Turkey. The form of the hole can be understood as a creation from a series of actions. It starts with simple geometry. Then with the uneven distribution of the force, the good form deforms in certain way. The scale of the deformation implies how much energy is distributed on that part of the surface.



Cave in Cappadocia

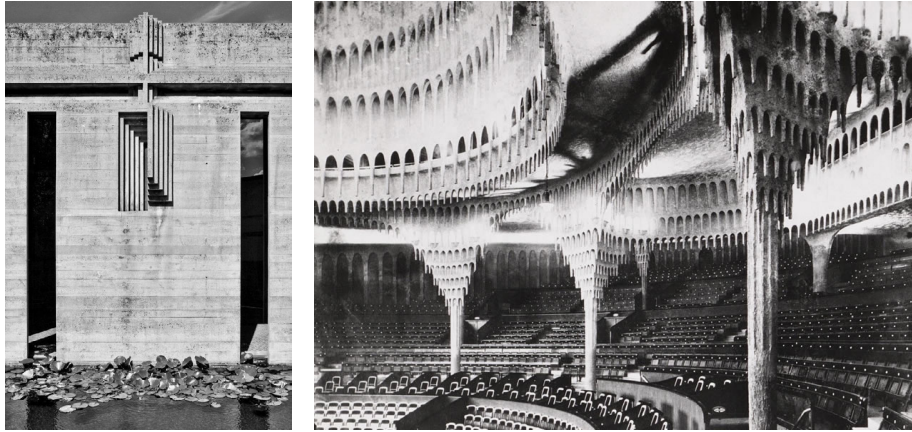




Paul Rudolph, Orange County Government Center (New York City, 1971)

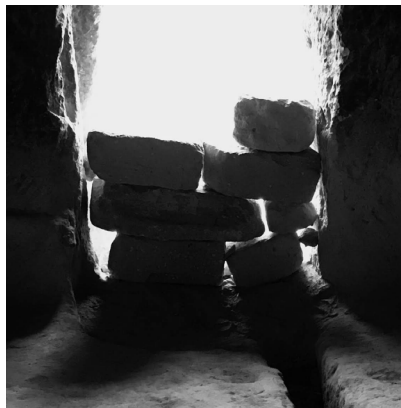
Christopher Alexander also mentions the concepts of ambiguous boundaries. He elaborates that it is the place where two phenomena interact, "a zone of interaction". [1] It can also be explained with rhythm. Under the effect of rhythm large scale things are breaking down into smaller scale things in variation. It is harder to draw a clear line distinguishing which bodies are which. For a more broken down thing, more surfaces area are created for interaction with other bodies. There is a shift from distinct bodies to the level of a bigger wholeness. In the particular case, as the increasing surfaces are parallel to each other, they are contributing to a higher degree of harmony, which will be discussed in the next sessions.

1. Christopher Alexander, *The Phenomenon of Life: An Essay on the Art of Building and the Nature of the Universe* (Berkeley, Calif.: Center for Environmental Structure, 2002), p. 254.



(Left) Carlo Scarpa, Brion Cemetery (Treviso, Italy, 1978).
(Right) Hans Poelzig, Grosses Schauspielhaus (Berlin, 1919).

The dividing process can be found also in the detail scales. The picture suggests that the details and the building form can be considered as a whole.



Stones found in cave in Cappadocia



Decomposing of the wall

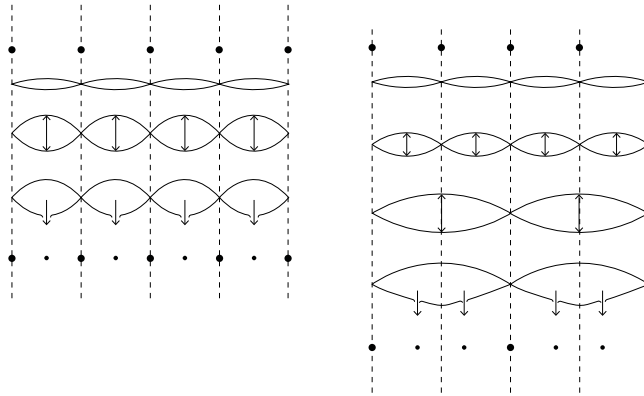
The deterioration or broken down of the materials can also be considered as manifest of rhythm. For broken down, a bigger body is broken into smaller bodies with smaller scales. For deterioration, considering the above photos, the part where concrete is wore away, the bricks reveals themselves. The process involves a change of number of bodies perceived and change of scales of the bodies.

RHYTHM - DENSITY

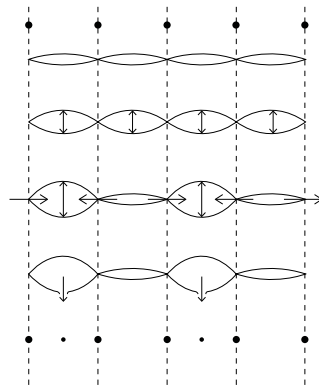
Considerer playing drums, the duration of every beat is fixed based on the instruments. In-between the two beats, there is silence, or "rest" in musical term. Rhythm is in this case is not about dividing a body into more bodies. It addresses how energy is distributed in-between existing bodies to "burst" into more beats. More dense the sound bodies are where there are more energy distributed.



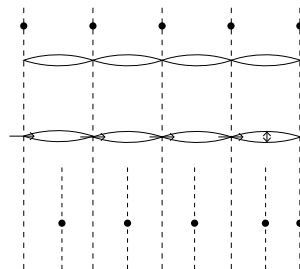
The redistribution of energy will result in different overall effects on the whole. There are three possible changes.



- The first one is to change the overall intensity of a space, provided that the location between each event are evenly distributed.



- The second one is to introduce fluctuation, changing the distribution of the events so that more events will be happening at some locations.



- The third one is to shift the location of events at a whole, which creates a more dynamic effects.



Hagia Sophia (Istanbul, Turkey, 537 AD).

This is the interior of the Hagia Sophia. Rhythm can be observed from the variations between the spacing of the openings. For the central dome, the openings are more densely placed, implying a more vital space.



Versailles, France. Hall with marble statues at the Palace of Versailles (Chateau de Versailles)

Statues can be understood as the actors appearing at the middle of each space. With the statues, the space feels more intense comparing to the one without the statues.

TONALITY

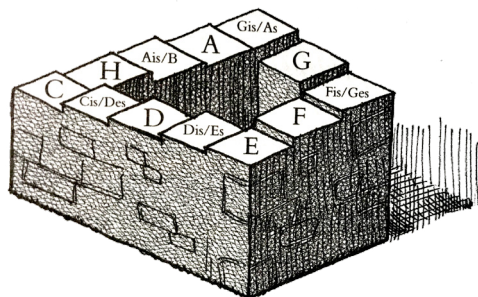
Tonality is more complicated comparing to rhythm. It is not directly addressed in the classical music score. Tonality is the arrangement of the notes of different pitches in a hierarchy according to stabilities, attractions and directionality. [1] It is a relative concept. It arises from the result of physical phenomenon - consonance and dissonance.

Consonance is "the combination of notes which are in harmony with each other due to their frequencies." It can also be understood as coherent.

Dissonance is the lack of harmony among musical notes.

The foundation of tonality is the pitch system. Notes with increasing frequency are presented in letters. The whole system is in a cycle. When the frequency difference between one cycle and another is 1:2.

In the creation of tonal music, every time, the composer will pick one pitch as the "I" or "Do", which is the reference note, or the key of the music. Other notes are in relationship to the reference note in as II, III, IV, V, VI, VII. Most importantly, It is a relative system. For a C major, C will be the "I". For A major, A will be the "I".



(left) Modified Penrose staircase showing the paradox of the musical octave. From Jason Martineau, *The Elements of Music: Melody, Rhythm & Harmony*, p. 8.

(Right) Relationship of the seven roots of the seven triads to the tonic. From Jason Martineau, *The Elements of Music: Melody, Rhythm & Harmony*, p. 21.

1. 'Tonality', Wikipedia (2019) <<https://en.wikipedia.org/wiki/Tonality>> accessed 20 March 2019

TONALITY - MENTAL STABILITY

For different degree of harmonization, People perceive different stability or dynamic feeling. It is also the tool for music to construct a story. By drawing relationship to the hand expression of the conductor. Drawing reference to the conductor expression, five states are identified.

Consonance

I - "I" is the state that people wanna stay along with it. It can be understood as the "home" to the whole piece of music.

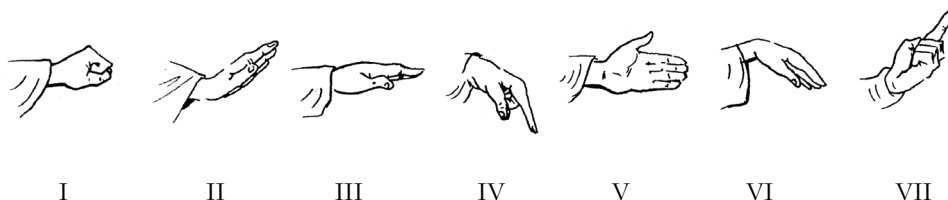
III - It happens most likely after "II", serving as a temporary rest after the determination state of II.

V - It is still in a harmonious relationship, so it is also stable. However, it is not as tempting as the "I". So people just pass by through but not staying along.

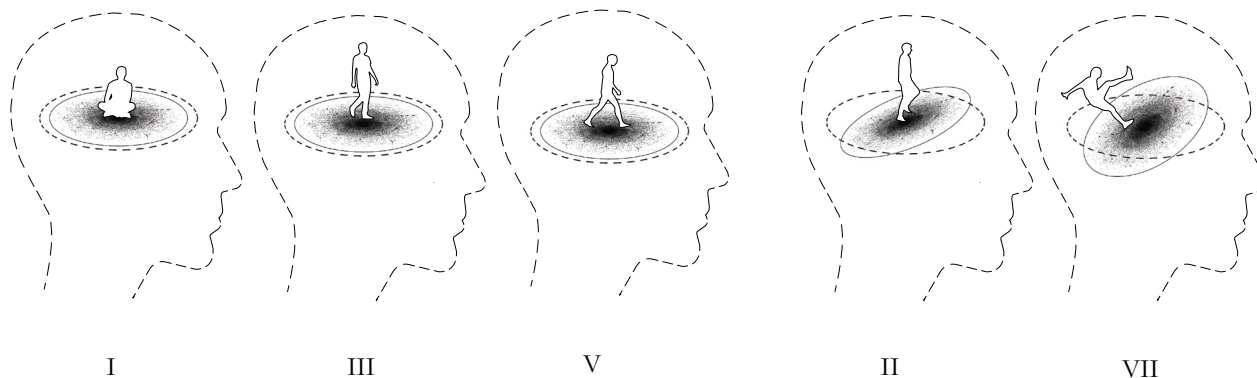
Dissonance

II - It usually serves the role of "departing". It has the feeling heading to a new direction, mid-way in the process. Although challenging, it implies possible.

VII - As there is a unpleasant feeling for dissonance. The combination is unstable so it is likely people prefer to stay away from.



The seven tones of the major scale, their curwen hand signs and associated qualities. From Jason Martineau, *The Elements of Music: Melody, Rhythm & Harmony*. p. 15.



TONALITY - FORCE BETWEEN BODIES

For a musical chord, two notes playing at the same time. It can be understood as two bodies are synthesized as one compound. The diagrams show the visualization of the chords, combining the concept of rhythm (horizontal pulse), vertical pitch height, and the degree of harmonization between the two notes.

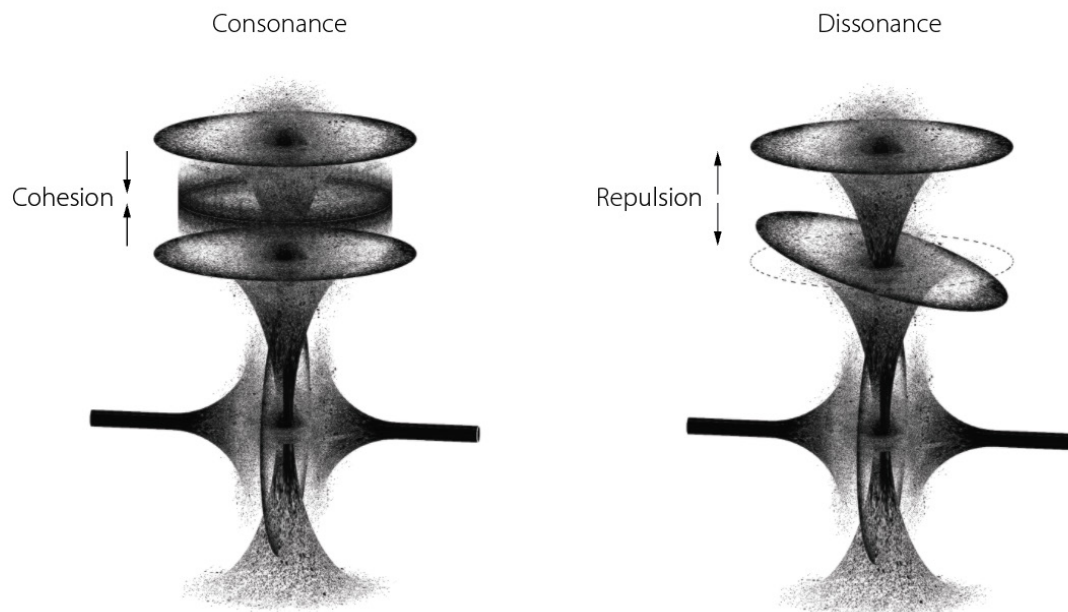
- In case of consonance, as harmonization is visualized as bonding or cohesion in between the two note bodies.
- For the case of dissonance. As there are not in harmonized relationship, they want to exclusion each other from the compound, resulting as the repulsion force.

According to Ernst Kurth, dissonance should also be conceived as an active and positive relationship as it fosters the flow of energy from one body to another one, synthesizing the musical body as follows.

In a broader sense, consonance is accompanied by a sense of rest, dissonance with the drive for continuation. [1]

Origin from:

Im weitesten Sinne hängt daher Konsonanz mit Ruhegefühl zusammen, Dissonanz mit Fortführungsdrang. [2]



1. D. Tan, Ernst Kurth at the Boundary of Music Theory and Psychology (University of Rochester, 2013), p. 178.
 2. Ernst Kurth, Musikpsychologie (Berlin: M. Hesse, 1931), p. 174.

TONALITY - DYNAMICITY

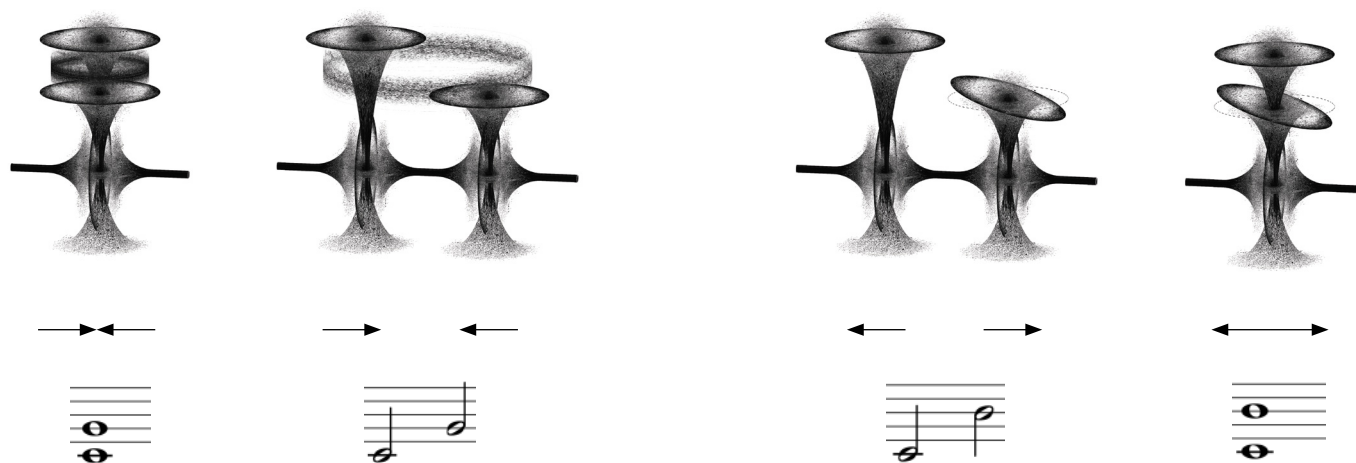
The rhythm, which is a horizontal pulses along time, carries the energy away from the compound body. More decomposed the compound body is into more elemental bodies, more dynamic it is. There is time-lapse between the bodies one encountering. For each the consonance and dissonance cases, there are two tendencies how the form changes.

Case I - The cohesion outweighs the lateral force, the compound remains as one body and last for a longer time.

Case II - The lateral force outweighs the cohesion, the compound is decomposed into two bodies. Harmony between bodies still exist, but weaker.

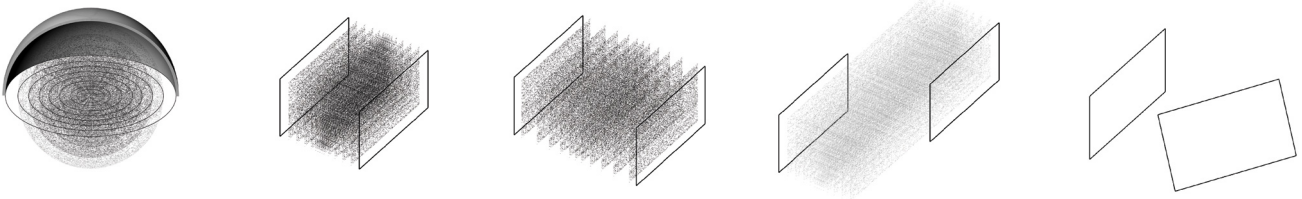
Case III - The repulsion fosters the decomposition of the compound body. Tension caused by the dissonance hence decreased.

Case IV - The decomposition of the compound is obstructed by the composer with an intention to uphold the tension.

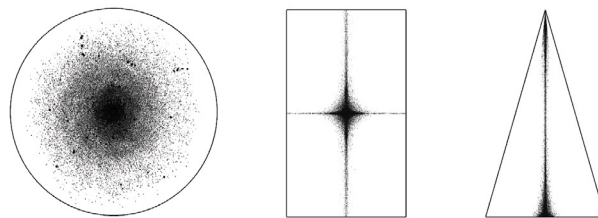


TONALITY IN ARCHITECTURE

To address the tonality, architecture needs to address three things - degree of harmony, the mental stability, and the dynamics between composing and decomposing. The degree of harmony and stability one can be addressed with the concept of parallel surfaces. In addition, the dynamics is addressed with an additional concept - alignments of symmetries. Between the parallel surfaces, more close the surface, higher the level of the harmony. If the surfaces are not parallel, no harmony is found. Sphere can be understood as made up of infinite planes at every point perpendicular to the centre.

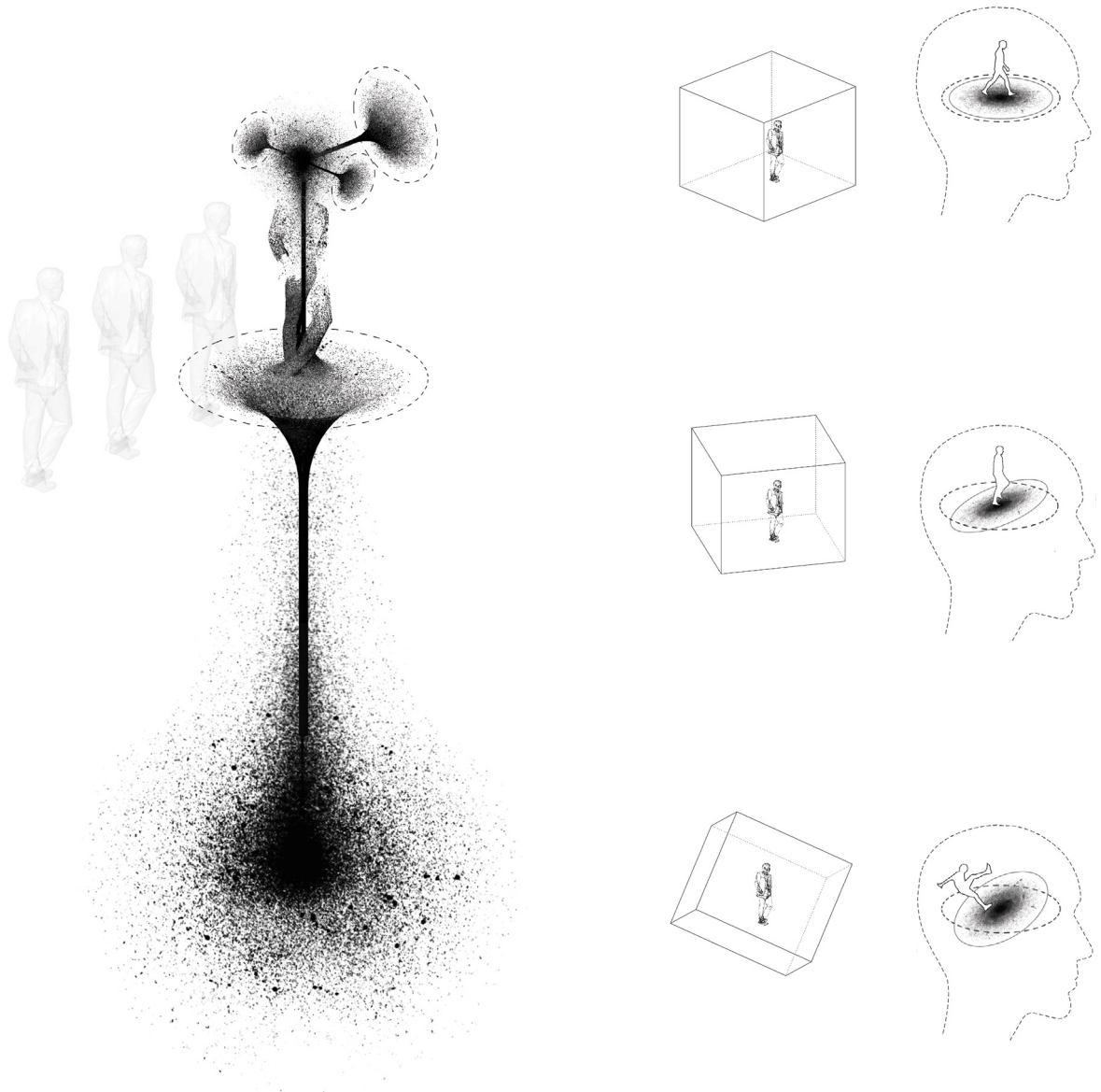


Christopher Alexander states that local symmetries are always found in the nature and it has close relationship with the "strong centre", found in the universe. [1] The strong centre and the local symmetry axis can be understood as the gravitational stream. More close one body to the centre or the axis, it is more easy to perceive the two bodies as one. The strong centre points can also be identified in the overlapping of local symmetries.



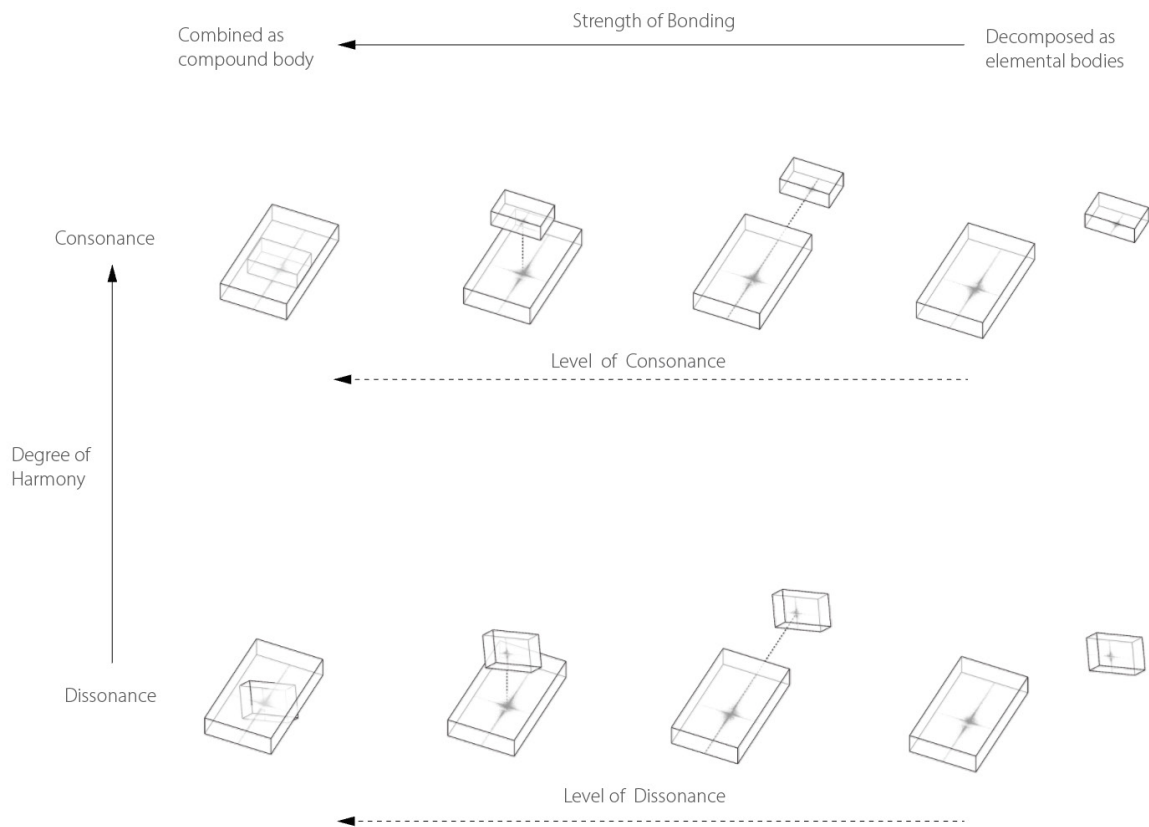
1. Christopher Alexander, *The Phenomenon of Life: An Essay on the Art of Building and the Nature of the Universe* (Berkeley, Calif.: Center for Environmental Structure, 2002), p. 186.

The mental stability is the degree of harmony between a body and our human body. For our body, three planes can be identified. The ground plane is the plane our body contacts with the ground under the effect of gravity. The front plane is the plane we sense and proceed. The side plane is perpendicular to the front plane. Depends on the degree of harmony with the planes, the people will have different state of mental stability. Different planes give different degree of mental connections. As the ground plane is the physical force acting on our body, it will induce the greatest connection to the mental stability.



CHAPTER VIII

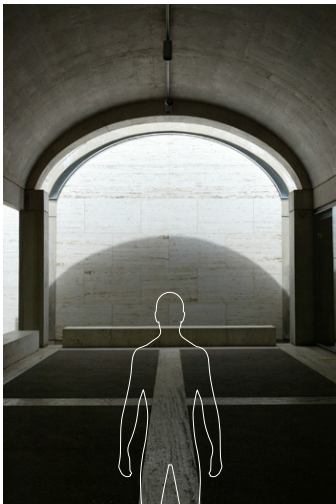
The alignment and the distance of the bodies will affect how we perceive the bodies. More aligned and closer they are, more likely we encounter them at the same time and group them as one unified scene. In contrast, less they are aligned or further away, more likely we perceive them as two bodies encountered. It can also be understood as if the two bodies are decomposed from the unified scene. The bonding of the bodies is maximized when they are aligned and at the same location. Stronger the bonding is, greater the level of consonance or dissonance will be.



CHAPTER VIII

The following are three examples are picked, illustrating how the surface planes and alignments will affect our feelings of one scenes.

- For the left one, it is a very symmetrical moment, a harmonious unified scene.
- For the second one, everythings are more or less parallel and perpendicular to each other, except for the sunlight. There are still symmetries but not to the degree of the left one. Comparing to the left one, the space is stable yet a more dynamic one. Due to the sunlight angle, the space is mixed with a little dissonance as a mild contrast, resulting a more fresh moment.
- For the right one, one encounters many rectangular rods, each with different angles and their surface planes are not parallel or perpendicular to each other. As they are close to each other that one encounters them at the same moment, one will sense a strong sense of dissonance, a repulsion.



(Left) Louis Kahn, Kimbell Art Museum (Fort Worth, Texas, 1972).
(Middle) Tadao Ando, Church of the light (Ibaraki, Osaka, 1989).
(Right) Daniel Libeskind, Jewish Museum Berlin (Berlin, 2001).

MELODY AS STREAM OF FLOW

Rhythm and tonality are mutually reinforcing each other. While rhythm is the force addressing the distribution of energy and generating the forms, tonality addresses the qualities how we sense the experience the forms.

Ernst Kurth states that "Melodie ist Bewegung", which means "Melody is motion". He treats melodies not only as a chained up structure, but a stream of force or energy of motion. [1] With the combination of tonality and rhythm, a forward stream of melody is created. The changes of pitch height also suggests the direction of the flow - rising or falling. Melody is the shift from individual bodies into a chained up wholeness. In Ernst Kurth's view, each individual music note occur within a broader melodic phrase. [2] The role of one single body is dependent on the whole, at the same time the whole is synthesized by the individuals. Moreover, by different combinations of rhythm and tonality, different style of music can be created. For example, more emphasis is put on rhythm for a heavy-metal music comparing to a classical music.

Melody can be found in architecture as the changing form which is synthesized by smaller constituent forms people experienced in certain sequence.

Melody as Stream (**main / continuous**)

Rising direction

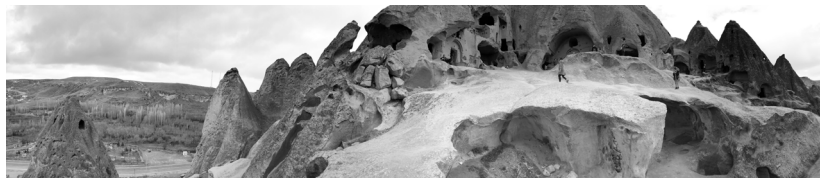
Chord (**discrete**) as support

1. Heinrich Schenker, *The Masterwork in Music: A Yearbook*. Vol. 1, (1925), ed. by William Drabkin, trans. by Ian Bent (Cambridge: Cambridge University Press, 1994), p. 52.

2. D. Tan, *Ernst Kurth at the Boundary of Music Theory and Psychology* (University of Rochester, 2013), p. 74.

MONOPHONY & POLYPHONY

In a music piece, there is usually a leading melodies carrying the main flow, and supported by discrete chords in certain moment. It is called monophony. The whole music piece is an intertwined structure. Some music will have different melodies intertwining with each other and the form is called polyphony. Different musical melodies can be distinguished by human because individual sounds within each melody usually share same timbre quality or within certain pitch range. People tends to perceive similar things as one group by nature. [1] In architecture, different stream of forms can be distinguished usually by the materials, shapes, or directions. The two figures below is a contrast between a monophony (upper) and a polyphony (lower).



Topography in Cappadocia



Ricardo Bofill, La Fabrica Taller de Arquitectura Ricardo Bofill (Sant Just Desvern, Barcelona, 1975).

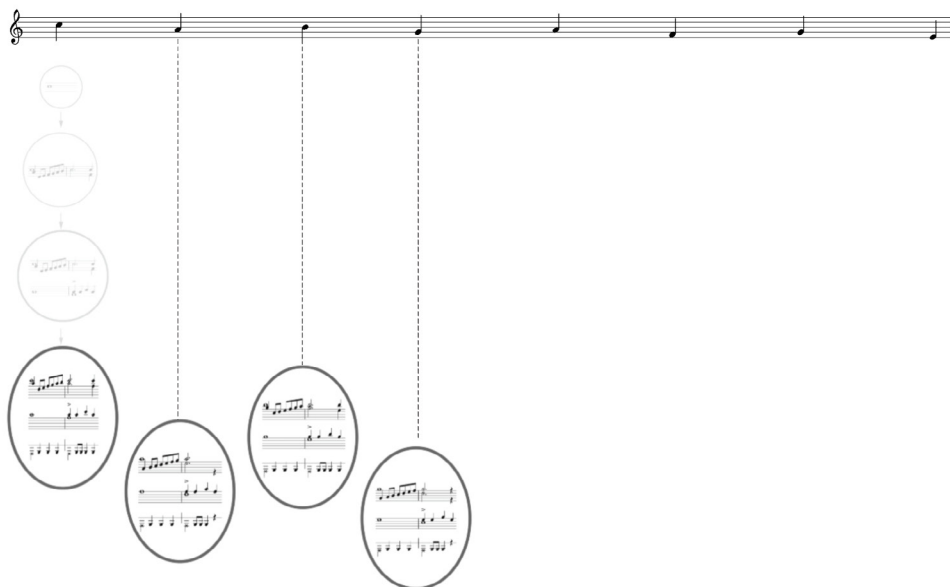
1. John Powell, *Why You Love Music: From Mozart to Metallica -- the Emotional Power of Beautiful Sounds*, 2017, chap. 11.

LAYERING IN MUSIC STRUCTURE

Heinrich Schenker, one of the most important western music theorist of nearly the one hundred years, suggests that there are layers in the musical bodies. [1] What he means layer is not about different melody lines stacking on each other, but about the degree of decomposition. His meaning is that, even the most complicated music piece, has the fundamental structure underneath. What we hear are the evolved version, with all kinds of rhetoric, ornamental additions on top of a fundamental body. The evolved version comes from its fundamental layer. Schenker describes the complex version as "surface" or "foreground" and fundamental structure as "background". [2] It is suggested that no matter how complicated the music goes, the flow is always following the very fundamental structure. He highly stressed that the surface is dependent on the background, which serves as a backbone. He criticizes listeners of only focus on the surface, but not the deep connections beneath.

The masses, however, lack the soul of genius. They are not aware of background, they have no feeling for the future. Their lives are merely an eternally disordered foreground a continuous present without connection, unwinding chaotically in empty, animal fashion. It is always the [bourgeois] individual who creates and transmits connection and coherence. [3]

Based on his theory, I compose a music with fundamental structure and then make a "more complexed" version out of it.

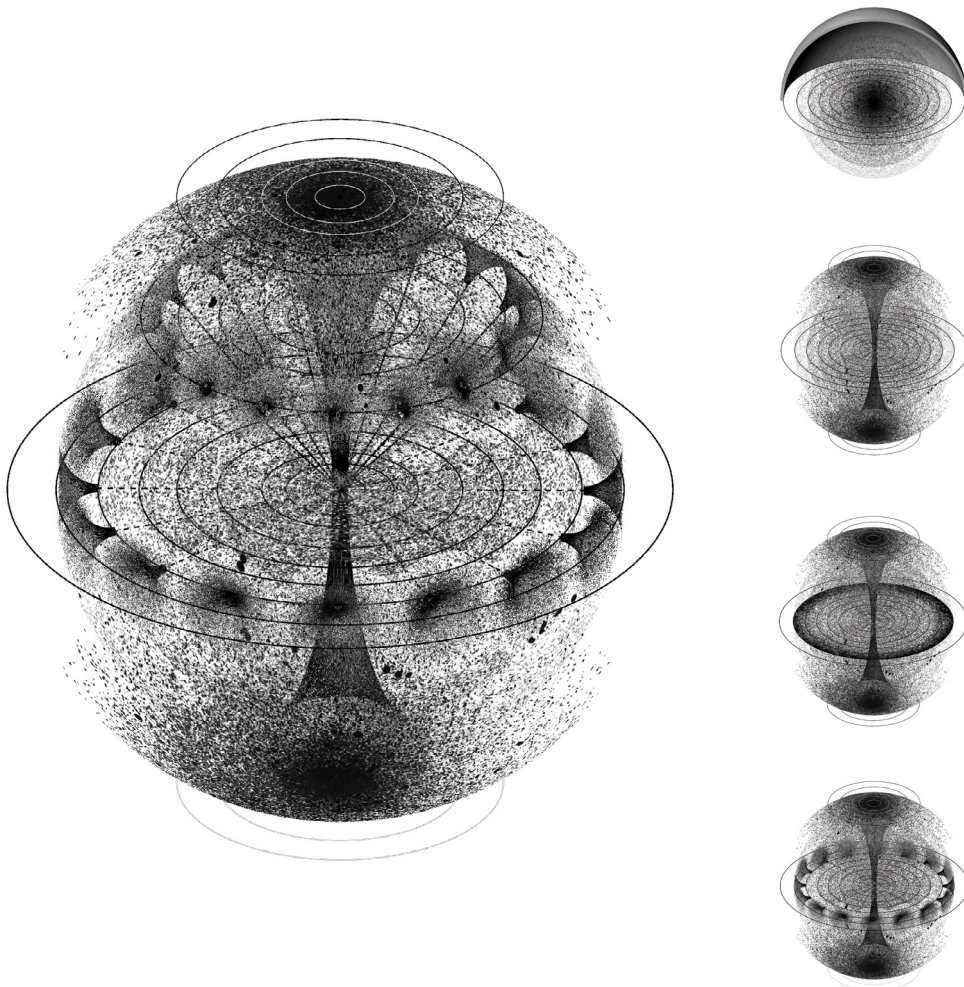


1. Adam Ockelford, Comparing Notes: How We Make Sense of Music, 2018, p. 14.
 2. ibid., p.15.
 3. ibid., p.18.

LAYERING AS LEVELS OF SCALE

The layering of structure can be reflected in architecture as different levels of scale coming together. Christopher Alexander also views different levels of scale coming along is a key to beautiful form. [1]

Pantheon in Rome, is regarded as a resonance element and the symbol of universe by Gert Sperling, who has researched on it over 30 years. [2] It is such a beautiful form. Here I combine the idea of the energy flow, the rhythm and tonality of music to illustrates how different scales are coming together in Pantheon. It can be imagined that the main part of Pantheon, including the ornaments, are coming out from a single blow up point of energy, while the energy are redistributing into different scales, creating different openings and ornaments.



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1. Christopher Alexander, *The Phenomenon of Life: An Essay on the Art of Building and the Nature of the Universe* (Berkeley, Calif.: Center for Environmental Structure, 2002), p. 145.
 2. Gert Sperling, 'Early Orchestration: The Pantheon as a Resonance Element', *Nexus Network Journal*, 6.1 (2004), 65–69 (p. 65)

LAYERING AS THEME DEVELOPMENT

The development of a piece of music is along the time line horizontally. Heinrich Schenker's layering concept also suggests the possibility that the development can be in vertical layers. As the development of a music or architecture body is indeed the sequence of experience, the layering technique in development of music body can also applied in architecture.

The basic layer can be understood as the atmosphere or aura of the whole experience, or story. For example, is this one a warm story...or thrilling story, or a sad story.....

It is also the fundamental story line. It acts like the frame work of the structure. It decides for example how many climaxes in the stories, is it with the open ending or is it with the close ending, is it just a section of music or it is the very full story addressing everything?

For example, like the Beethoven No. 5 symphony "Fate". The whole piece is separated into four sections, addressing Beethoven's mental state from stressful to relieved, marked by a very clear change of tone from minor to major.

After the whole story frame and atmosphere is set up... It is like plotting out the major events happening in the story. The more complex and complete the stories, the more layers there are. More complex the stories, more events or more characters the stories concern. As the layers increase, the detailing of the stories, such as small events are also described.

The surface layer is the most finely - tuned layer, which addresses all the detailing of even the smallest events. It gives a crucial touch to the whole story. The omitting of this layer will not affect the whole story lines.

REPETITION & CHANGE

Music speaks for itself that it does not need to reply on any lyrics or words to convey the meaning. In the book, *Emotion and meaning in music* by Leonard Meyer, he states that the musical meaning originates from the music body itself. He positions this stance as "absolutist" and contrasts it with the "referentialist" position. He regards referential meaning, derived and borrowed from the world outside music is subordinate. [1]

Then how can music addresses the meanings? Leibard Bernstein, an American composer, seeks to explain the musical structure in terms of linguistic concepts and terminology. One of the key concept underlining is "repetition". Bernstein parallels the repetition structure found in poetry and rhetoric to motifs in music. [2]

And do you now *put on your best attire*
And do you now *cull out a holiday*
And do you now *strew flowers in his way*
That comes in triumph over Pompey's blood? Be gone! [3]

Repetition serves two functions. First, it is to specify the boundaries of musical segmentation. When we here similar pattern again, we can recognize the boundaries of one segment of the music. It can help differentiate different constituent parts of a piece of music. Secondly, according to the Mere exposure effect, named by psychologist Robert Zajonc, human beings have positive mental feedback towards familiar events or things. This mechanism works in subconscious level that we are not aware of it at most of the time.[4] Exposure to repeating events or things also strengthens our memories of them, fostering our adaptation to a piece of music.

Repetition does not work alone, otherwise the music will end up being too monotonous. It needs to be paired with "change". It is to add the "surprise" ingredients to make the music intriguing to us. When change occurs among repetition, our arousal system and attention system in the brain will be triggered that we will try to focus and grasp an idea what is going on. Subconsciously, our tends to be alerted and have negative mental feedback as we are not familiar with the situation. Then when we realize it is only a change in the music piece, our mind relaxes. The change of state of mind from alerted to relaxed, will amplifying the positive feelings towards the piece of music. [5]

It is important that repetition and change work in pair and in a good contrast. Too much repetition, the music will be too monotonous; Too much change, the music is hard to follow.

1. Adam Ockelford, *Comparing Notes: How We Make Sense of Music*, 2018, p. 10-11.

2. *ibid.*, p. 26.

3. from a speech by Marullus, Act I, Scene I, *Julius Caesar* by William Shakespeare

4. John Powell, *Why You Love Music: From Mozart to Metallica -- the Emotional Power of Beautiful Sounds*, 2017, chap. 4.

5. *ibid.*

GENERATIVENESS & ADAPTIVENESS

Yet, Ernst Kurth suggests that repetition and change should not be regarded as a system to organize a musical structure. He points out that theories of classical music falls in the pit of imposing different structural framework or symmetry on the whole melody. Instead, he is suggesting the form of music should not be in different parts being "organised", but itself possesses an inner life growing and breaks through any rigid scheme. [1] I find that his view aligns with what Raymond Ruyer proposed.

Raymond Ruyer, a French Philosopher, has many discourses on several topics such as the philosophy of biology, the philosophy of informatics, the philosophy of value and others. He holds view that morphogenesis of a living entity can only be explained with a presume that a formative theme or melodies are controlling one's development. Ruyer's view on living forms is that they are self - shaping , self - sustaining , and self - enjoying entities. [1]

Every living form is the unfolding of a virtual melodic theme... one sees a growing autonomy in the organization of time and space [2]

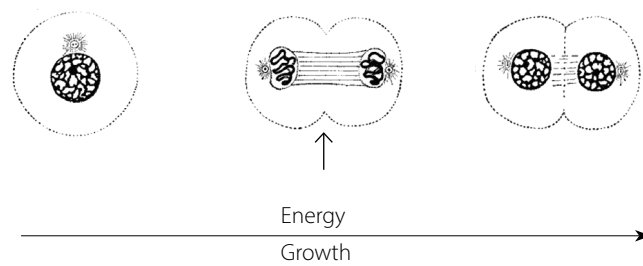
He also addressed repetition and change in way of the self formation as follows,

morphogenesis proceeds in a temporal , " horizontal " sequence , but always according to a " vertical , " trans - spatial and transtemporal theme , " an individualized melodic theme which can either be repeated as a whole or can be distributed in variations , in which the initial , repeated theme serves as its own ' development ' [3]

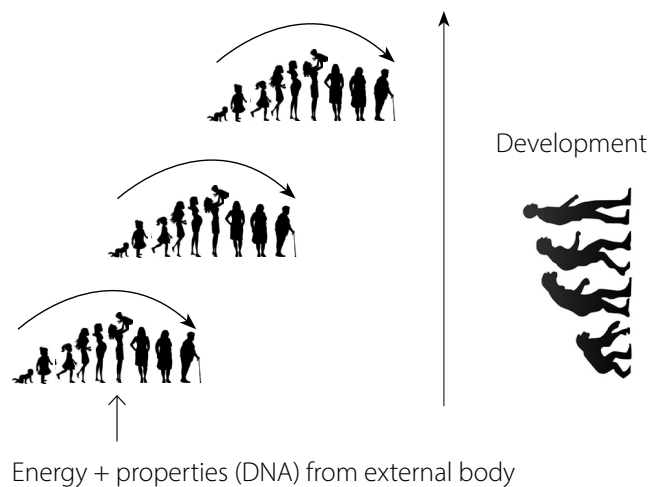
It can be understood that horizontal sequence, is the repetitive tendency of the all living bodies, including the music body. It is the instinct nature of living bodies. While the vertical is the changes introduced by the composer at particular moment to direct the flow of energy in a particular way to create a particular effect. It is a reflective and intellectual move.

1. D. Tan, Ernst Kurth at the Boundary of Music Theory and Psychology (University of Rochester, 2013), p. 251.
2. Ronald Bogue, Deleuze on Music, Painting, and the Arts, 2017, p. 172.
3. *ibid.*, p.65.
4. *ibid.*, p.63.

Repetition and change, then, can be understood as a process of reproduction and generation. It can be illustrated with biological bodies. In the cell bodies, when it attains energy from our human body, it tends to divide itself and create an identical copy of itself. All the properties of the original cell, for example the DNA, are inherent in the new copies. It is the easiest way to understand the repetitive tendency of all bodies.



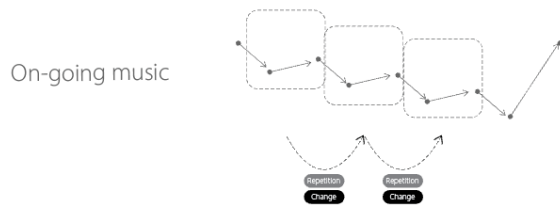
Music phrases can be also understood in an analogical way as the reproduction of a species. When one phrase ends, another phrase starts, with properties of the previous phrases inherited. Ernst Kurth also describes music experience as an experience of a series of dynamic arches. [1] At the same time there is variation among each phrase, as there are properties inherited from an external body. For an artwork, variation comes from the composer's intellectual introduction of new concepts. The musical structure is not a fixed one but a structure absorbing new concepts and assimilating them into its own body. It is adapting to the surrounding environment. It is evolving.



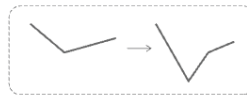
My illustration with the use of human development cycle and evolution diagrams.

1. D. Tan, *Ernst Kurth at the Boundary of Music Theory and Psychology* (University of Rochester, 2013), p. 255.

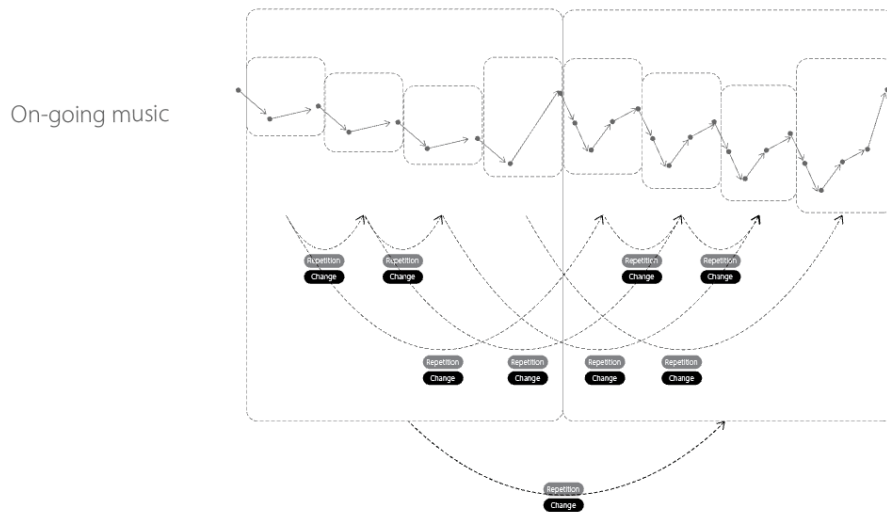
The following is my analysis of how repetition and change can be identified in a piece of music. It can be seen that each part can be traced back to its previous counterpart sharing similar patterns. An important thing to note is that if a whole phrase of music is reproduced, the elementary parts are also reproduced. The effect of the music is accumulated. In this analysis, the music generates and evolves from a relatively mild structure to a more rhythmic and dynamic one. Music, is the form which grows with its memories.



External directing from composer

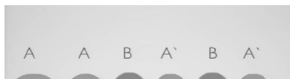


Previous happening (Memories) Happening at the moment



The following is the elaboration of analysis of different music structure from Ardon Shorr during his Ted talk. [1] The reproductive quality can be found in all kinds of musical form, from very simple song to a sophisticated symphony. Even the most sophisticated symphony can be synthesized from the smallest bodies. More complex the structure is, more levels of scales are embodied. As the structure can be continuously synthesized, it has the potential to grow continuously.

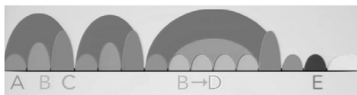
Schubert: Walzer



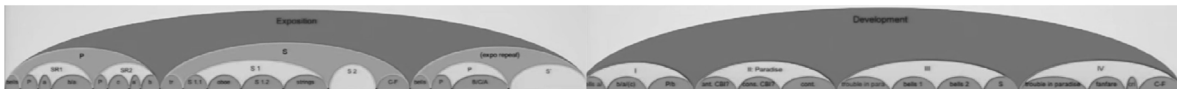
Foster the people: Pumped up kicks



Ben Fold: One angry dward



Mahler Symphony No. 4 Movement 1



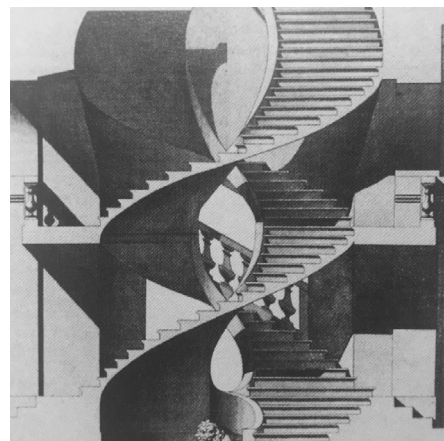
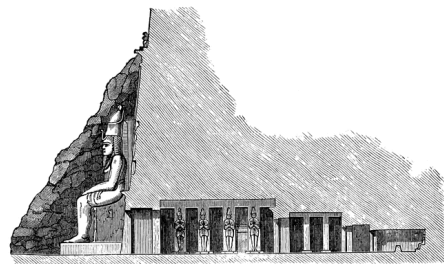
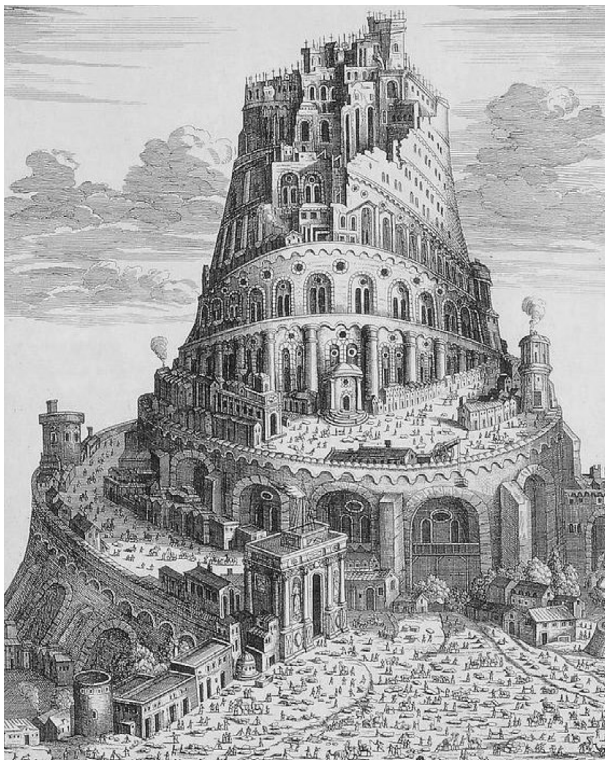
Diagrams showing musical structure from TEDx Talks. "Unlocking music with neuroscience | Ardon Shorr | TEDxCMU 2012." Youtube.

1. TEDx Talks. "Unlocking music with neuroscience | Ardon Shorr | TEDxCMU 2012." YouTube, 19 Apr. 2012, <<https://www.youtube.com/watch?v=cswHOCKQZ7Q&t=830s>> accessed 20 March 2019.

CHAPTER IX

The synthesis of architectural body is similar to that of the musical body. Repetitions and changes can be adopted in all kind of scale, for example, architectural elements, spatial form or even planning. What put an limit to the growth is mainly the exterior factors, for example, the area of the site, the structural limit of the materials, or the construction time frame...

The musical synthesis form can usually be found in religious or spiritual building. The building form itself is a progression of spatial sequence. Different parts of the progression are varied from one to another, marking different phases of the progression. Yet, different parts are connected by certain similarities, combined as a whole.



(left) Pierre Fourdrinier, Tower Of Babylon, 2016.

(Top Right) A. Rosengarten, Cross Section of the Great Temple at Abu Simbel, 1985.

(Bottom Right) Nicolas de Camus de Mézières, staircase in the Halle au Blé. From Robin Evans, *The projective Cast: Architecture and Its Three Geometries* (Cambridge: MIT Press, 1995).

CHOICE OF FOCUS

Synthesizing a musical body is also about choice of focus. As the musical bodies are the collective wholeness of individuals. One can choose to focus more on the individual body or the order which bonds different individual. In the conversation between a writer Haruki Murakami and conductor Seiji Ozawa, they discussed on the topic about the change of performance style for works of Beethoven. In the old days, the conductor tends to do Beethoven by "putting together a huge string section to make a thick heavy sound." [1] Ozawa elaborates by mentioning Maestro Karajan's conversation that "You don't have to work so hard with my orchestra. Just do the overall conducting and they will take care of the rest" In contrast, Ozawa replied by saying that he wanted to make he sound more open and transparent. "The cues made each of the musicians come through more clearly." [2] As mentioned in the previous a chapter, Architecture is like directing a theatrical scenes. What is the focus of that particular scene? Is it highlighting the main character? Or the overall sceneries?

1. H. Murakami, S. Ozawa, and J. Rubin, *Absolutely on Music: Conversations with Seiji Ozawa* (Knopf Doubleday Publishing Group, 2016), p. 39.

2. *ibid.*, p. 41.

CHAPTER IX



(left) Video clip of Francesco Bax Contemporary dance solo. From Francesco Bax, "This place was a shelter by Oalfur Arnalds - Contemporary Dance - Solo" Youtube.
(Right) Tadao Ando, Church of the light (Ibaraki, Osaka, 1989).

Tadao Ando adopts a minimalistic approach in space making. Within a moment in his architecture, instead of in a form of symphonised music, he tends to contrast individual sound or act with silence. The quality of each "stroke" is sharply focused. I will also understand this situation as "less is more". Less is the complexity of a composition, more is the quality one individual act delivering.



(left) William Hogarth the beggar's opera early to mid 18th century, 1728
(Right) Carlo Scarpa, Brion Cemetery (Treviso, Italy, 1978).

Some scenes, are not focus sharply on every single individual act, but the scenery itself is the focus. It involves many acts coming together at one particular moment. It delivers a overall atmosphere. In architecture, it can be reflected in Carlo Scarpa's architecture. In his architecture, different parts of the building, with different levels of scale, fuses as one wholeness.

STUDY - WATER & SILENCE

Thin layer of water can construct a space with silence quality. Silence can be understood as no event occurring. Less force is acting in a space, more silent it can be. Four ways are identified to achieve the effect with thin layer of water.

- The reflectiveness of water eliminates the perception of surface of the matter water. Since intensity depends on the force acting on the surface, making the surface unperceivable lower the intensity.
- As water is not in a frozen state. It is easily affected by the physical vibration of the surrounding environment. More thin the layer, more easily it will be affected. If no ripples or water wave are found, it is perceived that little vibrations are in the environment.
- The water pressure acting on the pool is proportional to the depth of the water. Thin layer of water indicates less force acting on the surface, hence lower intensity is achieved.
- With the help of reflectiveness, symmetry is an achieved, which gives a sense of harmonious feeling.



Tadao Ando, Benesse House Oval (Naoshima, Kagawa, 1995).

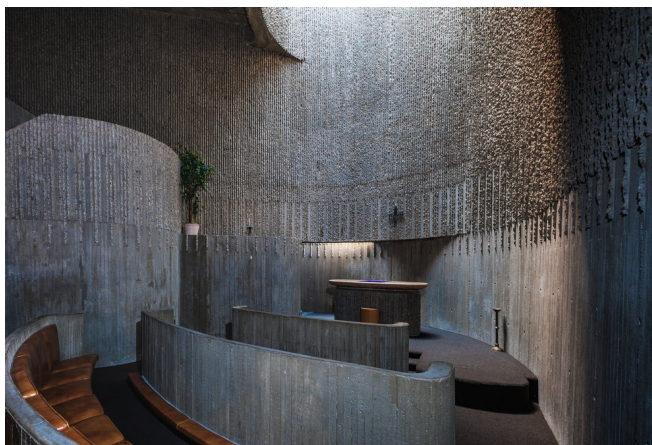
STUDY - ERICH LINDEMANN MENTAL HEALTH CENTRE

Erich Lindemann Mental Health Centre is a building through which Paul Rudolph aims to create an architecture with psychological effect, an architecture which is expressive and emotionally moving. [1]

The building is composed of elements like twisting stairways, a passage that prolongs and never reveal its ends, and a chapel with a stirring ambiance. However, the building did little healing effects. Instead, the responses to the building are a tragic. Incidents like patients lost were common and patients were found doing self-destructive acts. The catwalk over the Lindemann's plaza-level raised suicide attempts. Even worse, a patient died from igniting himself in the chapel. [2]

In my view, the building acts like an amplifier which amplifying the dynamic struggling of mental patients. From the search, it is studied that mental state is related to the affection embodied by our human body. For mental unstable patient, their affection is in a state of dynamic and more dissonant state. This building is observed to be a dynamic and continuous walking path, with many places not symmetrical and changing of direction. The building introduce more dissonant effect on the patients. The monotonous interior like environment which is like an endless suffering.. There is no relieve from the suffering.

Nevertheless it serves as a good example that architecture can affect one's mental state based on its form. If this one brings suffering, is there other form which heals?



Paul Rudolph, Erich Lindemann Mental Health Centre (Boston, 1971).

1. Philip Nobel, The Architecture of Madness/Brutalism < <https://installations08.wordpress.com/2008/10/01/brutalism/>> accessed 20 March 2019.

2. *ibid.*

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