COTAA

THE DOUBLE

2/2025

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Printed and bound
IDEA Printing S.A., December, 2025

ISSN 3061-4236
ISSN-L 3061-4236

Website: www.cotaa.ro
E-mail: office@cotaa.ro

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COTAA uses Noto Serif as open-source typefaces.
COTAA aims to be published once a year.

This issue of COTAA is supported by the Romanian Order of Architects, from the Architectural Stamp Duty.

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Dimensions

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Keywords: abstract dimensions; space-time continuum; planes of perspective; Kandinsky; Tschumi; Euclidean space; Hilbert space.

Abstract

Dimensions can — aside from physical quantities that are measurable in units of length, width, and height — also refer to abstract dimensions of space, which in quantum physics refers to possible states of a quantum system that exist depending on a subjective level of perception. Using a methodology of deconstruction and disassembly — in a continuation of Kandinsky's deconstruction of pictorial elements in art, and the exploration of urban components by Tschumi — the investigation examined the fundamental structure and system behind dimensionality. Based on scientific facts, and philosophical theories and observations by, amongst others, Euclid, Plato, Hypatia, Descartes, Deleuze, Rancière, and Steyerl, the investigation found that what constitutes the underlying mechanism of the universe on a fundamental level does not appear to be vectorial composition or angulation, but pulsation, alternating oppositions, and level of energy. This enables the establishing of a new classification system in a redefinition of spatial and abstract dimensions — or *planes of perspective* to distinguish and differentiate the word *dimension* relating to the Cartesian coordinate system, and other aspects and meanings of the same word, including philosophical and mathematical definitions — based on level of energy, and frequency level. The planes are organised as strata of energy / frequency levels, where each plane operates as a polar opposite of previous planes, thereby forming a sequence of *active*, or positive (+), and *passive*, inert, equilibrial, or negative (-) oppositions, and thus reflecting the rhythm of a sine wave oscillating between polar coordinates. This theorem expands on the definition of dimensions as a theoretical complement to the vector based Euclidean space, which originally was intended to represent an abstraction of physical space, and the Hilbert space system, which in mathematics is used to define infinite abstract dimensions.

*

In 1926, whilst teaching at the Bauhaus school of art and architecture, Kandinsky published the book *Punkt und Linie zu Fläche* [Point and Line to Plane] in which he explored the essence of pictorial art through geometrical elements. Analysing the fundamental elements in artistic practices, he found that it originated with *'dem Urelement der Malerei angefangen werden — mit dem Punkt'* [the proto-element in painting — the Point].'[1] Continuing his analytical dissection of pictorial components Kandinsky concluded that:

> *'Die geometrische Linie ist ein unsichtbares Wesen. Sie ist die Spur des sich bewegenden Punktes, also sein Erzeugnis. Sie ist aus der Bewegung entstanden — und zwar durch Vernichtung der höchsten in sich geschlossenen Ruhe des Punktes. Hier wird der Sprung aus dem Statischen in das Dynamische gemacht.'…'Die Linie ist also der größte Gegensatz zum malerischen Urelement — zum Punkt. Sehr genau genommen kann sie als ein sekundäres Element bezeichnet werden.'*
>
> [The geometric line is an invisible thing. It is the track made by the moving point; that is, its product. It is created by movement — specifically through the destruction of the intense self-contained repose of the point. Here, the leap out of the static into the dynamic occurs.]…[The line is, therefore, the greatest antithesis to the pictorial protoelement — the point. Viewed in the strictest sense, it can be designated as a secondary element].[2]

In Kandinsky's view the point constitutes the origin. His definition echoes Euclidean geometry, which defines the dimensional progression as originating from a point that develops into a line and then extends into a plane.[3] The investigation finds that what differs from the definition of a point in mathematics — the zeroth dimension — is that in art the point can exist as a visible and measurable entity. Theoretically, a point in art therefore equates to the first dimension, and the trajectory of the point forming a linear movement through time constitutes the equivalent of the second dimension. Dimensional definition in the field of art thus differs from dimensionality as defined in quantum physics.

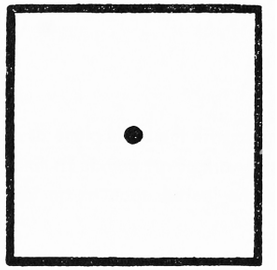

Figure 1: Compositional diagram of a point lying in the centre of a surface which is square in shape.
Source: Wassily Kandinsky. *Fig. 4.* Wassily Kandinsky, *Point and Line to Plane*, Hilla Rebay (ed.), (Dover Publications, 1926), 36.

Regarding the composition of a painting or drawing Kandinsky stated that *'der einfachste und knappste ist der Fall des zentralliegenden Punktes — des Punktes im Zentrum der Grundfläche, die ein Quadrat ist'* [the simplest and briefest is that of the centrally-placed point — of the point lying in the centre of a surface which is square in shape.][4] In his statement, Kandinsky makes an apparent reference to the painting *Black Circle* from 1923 by Malevich, which depicts a black circle on a white background, set in a square frame.[5] The circle in Malevich' painting is, however, not perfectly centred within the frame, but positioned close to the top right corner, forming an asymmetrical composition. It is part of a series of paintings of geometrical shapes, which also included *Black Square*, in which Malevich explored extreme subjectivity in order to obtain the supreme experience of an emotional response and the evoking of feelings. Devoid of figurative components and reduced to a geometrical abstraction, the paintings transcended any form of objectivity and therefore offered the viewer a pure subjective level of perception.[6] To Kandinsky the pictorial composition of a point in a square frame represents the prototype of pictorial composition:

> *Auf dem Wege der Vereinfachung ist dies der letzte Fall der nacheinander folgenden Auflösungen von Mehr- und Doppelklängen, unter Aus-Schaltung sämtlicher komplizierterer Elemente — Zurückführung der Komposition auf das einzige Urelement. So stellt dieser Fall das Urbild des malerischen Ausdrucks dar.*
>
> [This, on the road to simplification, is the last stage in the progressive dissolution of multiple and double sounds through elimination of all complicated elements — reducing the composition to the single proto-element. This, therefore, represents the prototype of pictorial expression.][7]

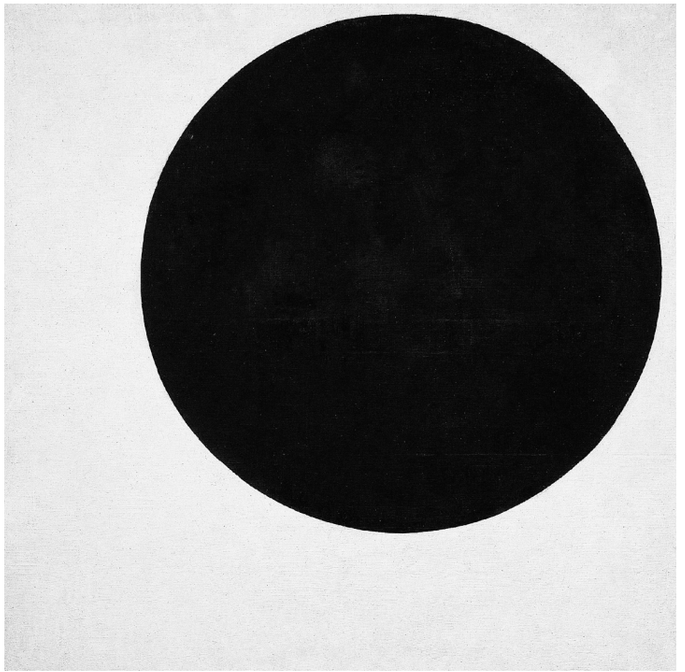

Figure 2: Kazimir Malevich. *Black Circle.* c. 1923. Oil on canvas, 105.5 x 106 cm. Source: State Russian Museum, St. Petersburg, inv. Sch-9472. Erich Lessing Culture and Fine Arts Archives. Artstor.

Similarly to Kandinsky and Malevich exploring the elements and the essence of abstraction in pictorial art, in his book *The Manhattan Transcripts* Tschumi deconstructs the urban typologies of park, street, tower, and block.[8] Tschumi finds the architectural language to have limitations, and that there is 'a need to question the modes of representation generally used by architects: plans, sections, axonometrics, perspectives,'[9] but abstains from exploring these representational limitations further, as 'any attempt to go beyond such limits, to offer another reading of architecture, demands the questioning of these conventions.'[10] Instead, Tschumi's theoretical exploration focuses on events, movements and programmatic activities, which as a series of temporary and sequential experiences relates to the element of time.[11] Thus, the investigation finds that this indicates an expansion of architecture from the third dimension into the fourth dimension of spacetime continuum.[12]

The etymological meaning of the word dimension stems from the Latin word *dīmēnsiō*, which stems from *dīmetīrī* meaning 'to measure out.'[13] The word originates from the Greek word *dvis* [δίς] meaning 'twice', from *duo* [δύο] 'two', and *metiri* 'to measure.'[14] [15] The meaning of the word dimension thus refers to the measuring of the distance between two points. Dimensions can — aside from physical quantities that are measurable in units of length, width, and height — also refer to abstract dimensions of space, which in quantum physics refers to possible states of a quantum system that exist depending on a subjective level of perception. In mathematics a geometrical point in space represents the zeroth dimension, or nildimensional space.
The definition of the first dimension in physics and mathematics is a space where location can be specified with a single coordinate along the x-axis in a Cartesian coordinate system and thereby denoting length. The second dimension is defined by a perpendicular positioning of the y-axis to the x-axis and thus forming a plane. The third dimension is defined by the z-axis, which is again perpendicularly positioned to both the x-axis and the y-axis, and thereby forming depth, and consequently volume.[16] Thus, by combining these facts regarding the positioning of the axises, the investigation finds that this sequence shows that dimensions exist as diametrical opposites of the previous dimension, which indicates that, in extension, abstract dimensions also form a systemic duality that is continuously replicated as opposite versions of the original.

According to Plato it is not possible to understand higher dimensions from the limitations of a third dimensional perspective solely based on empirical evidence. In the allegory of the cave, Plato argued that rather than from an empirical experience only, higher dimensional knowledge is acquired and attained through a process of intellectual reasoning.[17] In *Theory of Forms* Plato discussed how attaining a higher degree of knowledge can change the perception on reality.[18] An attainment of knowledge is according to Plato required to perceive the realm of *true forms*, which is a higher dimension existing beyond the physical reality.[19] Plato is thereby implying that the mind has the ability to acquire a perception of reality beyond physical existence. Plato is in this aspect supported by Descartes, who made the assertion that body and mind are distinct substances.[20]

The concept of dimensionality is not as defined in the philosophy of Kant, who in *Kritik der reinen Vernunft* [The Critique of Pure Reason] identifies

two forms of sensibility — space and time — where *sinnlichkeit* [sensibility] relates to the ability to perceive reality through our senses.[21] To Kant space relates to external intuition, and time to internal intuition. The duality of these notions, according to Kant, exist beyond oppositions and encompass the totality of our perceptive ability. Kant makes a distinction between the *phenomenal* realm, reality as experienced through our senses, and the *noumenal* realm, which he refers to as the underlying reality that informs the *phenomenal* realm, but is beyond the capability of our senses to perceive, and therefore exist beyond our comprehension and understanding.[22]

Hegel explored subjective perception as a phenomenological experience, in which experience is explored through conscious intent.[23] Hegel's philosophy is focused on the progression from a subjectively perceived experience to objective perceptivity through a dialectical process.[24] To Hegel, binary oppositions are thus part of a larger process, where the dialectical process involves realising and understanding the restrictions of the opposition in order to evolve the idea further, and thereby result in a synthesis of opinions. The aim of the dialectical process is to reach what Hegel referred to as the *Absolute,* which is a state of higher knowledge and understanding of reality.[25]

Deleuze and Guattari argue in *Mille plateaux* [A Thousand Plateaus] that the scope of what they refer to as individual *becomings* and *multiplicities* in extension form a plane of consistency, which overlaps and intersects the dimensional strata.[26] To Deleuze and Guattari individual perception of reality is defined by active and passive *affects* in the context of individual *assemblages*, which relate to collective compositions of processes.[27] In outlining new modes of subjective perception they identify subjectivity as part of a process.[28] In similar sense, Derrida is less focused on the individual, subjective experience and perception. Instead, Derrida is more concerned with external factors, such as language, which affects the subtle differentiation in the meanings of words, and how societal structures affect and shape our identities. Derrida argues that subjectivity is mediated and established by a field of *différance*, which as a concept is referring to the synergy and process of differing and deferring meanings within culture and language. One aspect of Derrida's theory on deconstruction explores the construction and meanings through a process of difference and deferral involving the interruption and destabilisation of binary oppositions.[29] Whereas Hegel's dialectic process aims to advance towards synthesis — and therefore an obtainment of objectivity — the theory on deconstruction by Derrida explores the change and variability of binary oppositions.

In *Le pli Leibniz et le baroque* [The Fold: Leibniz and the Baroque] Deleuze refers to opposing sides being connected through the concept of a *fold*.[30] According to Deleuze, opposites are not in separation, and he is thereby identifying connectivity between opposing sides. This implies unity and interconnectedness through a change of perspective, where the folds provides an illusory separation — and unity — between what appears to be inherently different parts of reality.[31] Connectivity between oppositions is also discussed by Rancière in his essay *Les confidences du monument (Deleuze et la «résistance de l'art")* [The Monument and its Confidences; or Deleuze and Art's Capacity of 'Resistance'], in which he defines art and politics as opposites forming a reciprocal unity. Thus, art and politics function as binary opposites, and *'pour que la résistance de l'art ne s'évanouisse pas dans son contraire, elle doit rester la tension irrésolue entre deux résistances'* [to prevent the resistance of art from fading into its contrary, it must be upheld as the unresolved tension between two resistances.][32] [33]

A disruption of the social order, what Rancière refers to as *dissensus* — an opposition to the consensual — and the tension between art and politics, is also a central topic for Steyerl.[34] In her essay *In Free Fall: A Thought Experiment on Vertical Perspective*, Steyerl makes a comparison between the abandonment of the use of linear perspective as the ruling paradigm in Western art, and its link to societal change.[35] According to Steyerl visual representation is linked to power and the perception of reality, arguing that new visualisation techniques enables new perspectives on reality. The once dominant use of linear perspective was gradually replaced with a vertical perspective based on plans, maps, and aerial views visualised from an elevated position, such as from aeroplanes, helicopters, drones and satellites, where altitude enables overview, surveillance and control. This vertical perspective —

which she observes that is closely linked with politics — is, as a collectively dominant perspective in society, being replaced by multiple visual representations, forming a new representational freedom, and thereby allowing the collective perspective to shift towards a multitude of subjective perspectives.[36] In Steyerl's words, the fall of the vertical perspective as a leading, main perspective is:

> […] *a fall towards objects without reservation, embracing a world of forces and matter, which lacks any original stability and sparks the sudden shock of the open: a freedom that is terrifying, utterly deterritorializing, and always already unknown. Falling means ruin and demise as well as love and abandon, passion and surrender, decline and catastrophe. Falling is corruption as well as liberation, a condition that turns people into things and vice versa. It takes place in an opening we could endure or enjoy, embrace or suffer, or simply accept as reality.*[37]

She continues:

> […] *but falling does not only mean falling apart, it can also mean a new certainty falling into place. Grappling with an agonising present, we may realise that the place we are falling toward is no longer grounded, nor is it stable. It promises no community, but a shifting formation.*[38]

The investigation finds that Steyerl's observation of a societal shift in the depiction of the terrestrial landscape, where the collectively dominating perception of the spatial environment — and thus, in extension, the perception on third dimensional reality — is in the process of shifting towards a fragmentised perspective.

On a fundamental level, perception relates to the dimension through which reality is perceived. The investigation, therefore, finds that if reality is perceived and experienced as three dimensional, the spatial understanding and the subjective interpretation of reality is filtered through the lens of third dimensional limitations and constraints. The third dimension is defined by Euclidean vector space,[39] which as a coordinate system is based on an interpretation of the definitions of a *point, line* and *plane* in Euclid's *Στοιχεῖα Stoikheîa* [Elements].[40] Euclid states that:

> *α′. Σημεῖόν ἐστιν, οὗ μέρος οὐθέν.* [1. A point is that of which there is no part.]
> *β′. Γραμμὴ δὲ μῆκος ἀπλατές.* [2. And a line is a length without breadth.]
> *γ′. Γραμμῆς δὲ πέρατα σημεῖα.* [3. And the extremities of a line are points.]
> *δ′. Εὐθεῖα γραμμή ἐστιν, ἥτις ἐξ ἴσου τοῖς ἐφ᾽ ἑαυτῆς σημείοις κεῖται.* [4. A straight-line is (any) one which lies evenly with points on itself.]
> *ε′. Ἐπιφάνεια δέ ἐστιν, ὃ μῆκος καὶ πλάτος μόνον ἔχει.* [5. And a surface is that which has length and breadth only.]
> *ς′. Ἐπιφανείας δὲ πέρατα γραμμαί.* [6. And the extremities of a surface are lines.]
> *ζ′. Ἐπίπεδος ἐπιφάνειά ἐστιν, ἥτις ἐξ ἴσου ταῖς ἐφ᾽ ἑαυτῆς εὐθείαις κεῖται.* [7. A plane surface is (any) one which lies evenly with the straight-lines on itself.][41]

Euclidean space, it is found, was thus originally developed as a model for physical reality. Vector based dimensional systems are derived from a perspective of reality as a measurable vector space. Hence, a one-dimensional perspective on reality, meaning a hypothetical ability to perceive only the length of the first dimension, or a planar perspective of the second dimension, do not include the ability to perceive the element of time. Nor is the element of time part of the ability of volumetric perception in the third dimension due to the definition of fourth dimensional spacetime as a separate dimensionality. In the fourth dimension Euclidean space is combined with the element of time and thereby enabling spacetime continuum.

Apart from Euclidean space, and Hilbert space (which in mathematics is used to calculate infinite abstract dimensions[42]) there are within mathematics several other axiomatic and metrical systems, which is thereby providing a potential for alternative systems of geometry to be used also within other scientific fields.[43] In fact, the mathematician and physicist von Neumann notably criticised and abandoned the use of Hilbert space in quantum mechanics.[44] Thus, the investigation finds that the development within geometry to mathematically calculate, and thereby to expand, the knowledge on dimensionality through a multitude of systems suggests —

similarly to the shifting perspective in art observed by Steyerl — a shift towards a widening of the perspective on reality through multiple viewpoints.

A shift has also occurred in regards to the meaning of the word *dimension.* In reference to Derrida's concept of *différance*, over time the meaning of the word *dimension* has changed, resulting in a divergence into several, variable meanings that in various degrees deviate from the original meaning of the word.[45] The investigation, therefore, finds that dimensionality is scientifically and conceptually diverging and evolving into multiple facets of reality in a continuous process of evolution and distortion. This has resulted in a discrepancy between the classification of spatial and abstract dimensions in quantum physics as defined by the number of vectors, and the mind's ability to interpret two dimensional images through ocular perception into volumetric and spatial understanding — and thereby its ability to perceive reality — which is linked to the ability of the mind to subjectively interpret layers of dimensional strata, as indicated by Plato, Descartes, Hegel, Deleuze and Guattari.

In order to investigate dimensions on a fundamental level, the study uses a methodology of disassembly and deconstruction. This entails an investigation into the compositional structure of the universe — not in the sense of elementary particles of atoms, or of subatomic particles — but a disassembling of the components of the universe, and an investigation into the mechanisms of the universe on a fundamental level.

In simplified terms, the universe is composed of energy and matter.[46] Energy is associated with movement, action and force, and is in physics defined as the capacity for doing work.[47] Matter, on the other hand, is defined as material substance that constitutes the observable universe.[48] Matter is magnetic, and due to the polarisation effect of magnetism matter is 'either paramagnetic or diamagnetic depending on an attraction or repulsion by the magnetic pole.'[49] Another fundamental property of matter is inertia, which is referring to its resistance to changes in motion, whether at rest or in motion, and which is directly proportional to the mass of an object.[50] In physics, matter is defined as having mass and volume, and may appear in any of several states — solids, liquids, gases, plasmas, or other states, including Bose-Einstein condensates, superfluids, and supersolids — depending on the level of energy of the particle.[51]

Polar opposites are not only found in magnetism and in the alternation between the polar coordinates in sine waves, polarity is also a fundamental part of other aspects of the universe. As shown, oppositions form the base for the current definition of dimensions in the Cartesian coordinate system, and opposites in the form of chirality — which can be found in biology, chemistry, mathematics, and physics — constitutes a fundamental concept of how the universe operates and functions.[52] In quantum theory, an alternation between positive and negative states is found in the theory of the pulsating universe, where the universe pulsates through a cycle of alternating expansion and contraction.[53] Pulsation is observed in stellar and galactic pulsations, and in gravitational waves as distortions, or ripples in spacetime.[54] By definition, a pulse is a single oscillation, whereas a wave is the disturbance in a medium composed by successive, or continuous, pulsations in a rhythmic sequence.[55] Wave intensity is measured in amplitude, which means the difference between an energetic (*active*) position, and a position of equilibrium (*passive*).[56]

Analysing and evaluating these scientific facts, the investigation finds that inverted counterparts seem to appear across aspects of reality in an universal recursive pattern, thereby indicating that polarity and oppositions form a fundamental base for our collective understanding of reality. In emulating Hypatia by applying philosophy to science, it is found that the connectivity between binary oppositions in the philosophies of Hegel, Deleuze, and Rancière — as dual parts of a unified whole operating as a reciprocal unity — is functioning similarly to the polar nodes in a magnetic field.[57] The reciprocal actions between these oppositions also display similarities to the movement of a sine wave oscillating between values. Thus, the observations of these philosophers appear to equate to the movement of energy, indicating a universal effect of sociological interactions and interplay reflecting the behaviour of electrons in a magnetic field, and the oscillating sinusoidal waveform (∿) of an electrical alternating current (AC). By merging philosophical aspects with science and empirical

evidence the investigation finds that physical reality — as subjectively perceived — exists through tension between opposites.

The investigation, therefore, concludes that based on these scientific facts and philosophical theories and observations of reality, what constitutes the operational structure of the universe on a fundamental level does not appear to be vectorial composition or angulation, but pulsation, alternating oppositions, and level of energy. A synthesis of these scientific principles applied to dimensions — an increasing level of energy, starting from the highest amount of stored energy (or mass according to the theory of relativity $E=mc^2$), which equates to solid matter in a state of inertia, in combination with rhythmic pulsation and polarity, resulting in a sequence of alternating polar oppositions of active and passive states, which can alternatively be referred to as electric, or positive (+),[58] and inert, equilibrial, magnetic, or negative (-) states — would thus lead to the following dimensional definitions:

The first dimension reflects matter in its lowest amount of energy, i.e. in a solidified state, and is thereby characterised by inertia and equilibrium.

Figure 3. Conceptual diagram of the first dimension. Matter is here depicted and conceptualised as a single, solid particle. The diagram thus symbolises matter in a solidified state. The point is also in reference to the universe before the Big Bang, when it according to the singularity theory existed as a dense, single point. ("What is the Big Bang Theory?", Matt Williams (author), Phys.org, published Dec 18, 2015, accessed June 5, 2025, https://phys.org/news/2015-12-big-theory.html). Notably, the first dimension bears a resemblance to Kandinsky's depiction of the proto-element in art — the point — thereby indicating a coherency between quantum theory and art. Source: Author.

The second dimension — which constitutes the opposite to the static physicality of matter in the first dimension — is thus active, or electric (+). In the second dimension the equilibrium of the first dimension is disrupted, and the pulse of energy in the second dimension forces the particles of matter in the first dimension into a state of transformation and displacement, and thereby forming a trajectory in time. The pulse of energy in second dimension refers to a point of initiation, and is thus equivalent to the start and formation of linear time.

As dimensions alternate between active and passive states, the third dimension is thus a passive (-) state. The third dimension constitutes the consequential result of the combination of the solid, inert particles of matter in the first dimension with the pulses of energy in the second dimension, resulting in the movement and transformation of matter. The third dimension reality is therefore perceived as the transformation of matter in linear time, where the result of the activity and movement initiated in the second dimension can be observed and experienced. The separation of matter and energy in the second dimension is in the third dimension manifested as polarity, and thereby resulting in binary oppositions, chirality, and subjective perceptivity. The change and transformation of matter — displacement, changes in the state of matter, and changes in molecular composition and structure — caused by the activity in the second dimension that is being observed and perceived in the third dimension, form an opposition to the inertia, equilibrium and the static immobility of matter in the first dimension.

The fourth dimension is active (+) and through an opposition to the linear movement of time in the second dimension — which represents the departure and movement of energy away from its point of origin — the fourth dimension is forming a curved movement that is returning to its point of origin. The fourth dimension is thus forming a circular motion that is manifesting as infinite, cyclic time. Perception is in the fourth dimension therefore related to the ability to perceive and experience time as cycles. As the pulse of energy in the second dimension is combined with the rotational movement of the fourth dimension it is forming an expanding, logarithmic spiral, which is evident in the golden ratio of ϕ and the Fibonacci sequence.[59] [60] [61]

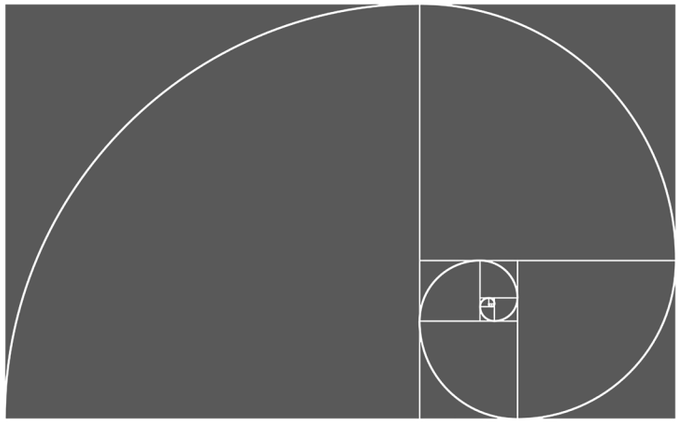

Figure 4: ϕ.
Source: Author.

The fifth dimension is passive (-) and in forming an opposition to the physicality of the third dimension, the fifth dimension is therefore non-physical. Through an opposition to the second and fourth dimensions, the fifth dimension is not bound to the element of linear or cyclic time. The fifth dimension thus constitutes a level of perspective unrestricted by the limitations of time and space. This enables the mind to independently observe and perceive moments in time by going back and forth along the logarithmic spiral of time, resulting in access and ability to perceive past, present and future moments in time. The fifth dimension thereby provides an overview of the sequences of cycles and processes in the fourth dimension, enabling cyclic processes to be perceived as integral parts of the whole that exist simultaneously. Data and information from the past, present and future can therefore be accessed independently from time and spatial location, leading to continuous discovery and realisation of causation, and the obtainment of knowledge of the correlation between processes across scales of reality. In opposition to the polarity of the third dimension, the fifth dimension operates through integration and synthesis, enabling reality to be perceived objectively through a lens of unity and oneness.

Beyond the fifth dimension, the dimensional sequence of oppositions that are the result of mirroring previous dimensions continues *ad infinitum*. Dimensions — or *planes of perspective*, to distinguish and differentiate the word *dimension* relating to the measurement of distances, and other aspects and meanings of the same word, including philosophical and mathematical definitions — form a series of oppositions, reflecting the rhythm of a sine wave oscillating between polar coordinates. It constitutes a system that is continuously reflecting an inverted double of itself that mirrors the reality of previous dimensions, and thereby offering new perspectives on reality.

The sequence of dimensions follows a pattern of alternating and interchanging positions of diametrical oppositions, where positive dimensions are dynamic and involve activity, movement and initiation, as opposed to the passive receptivity of negative dimensions, where reality is observed and experienced as a result of the activity in positive dimensions. The gradual increase in level of energy with each dimensional level correlates with a gradual rise in frequency (an increase in energy equals an increase of frequency according to Planck's equation $E=hv$), starting with the static immobility of the first dimension, and then gradually rising, causing atomic particles to accelerate in frequency and vibrate in accordance with the rise in the level of energy.[62] This enables the establishing of a new classification system for dimensions based on level of energy and frequency level.

This theorem expands on the definition of dimensions as a theoretical complement to the vector based Euclidean space, which originally was intended to represent an abstraction of physical space, and the Hilbert space system, which in mathematics is used to define infinite abstract dimensions. It complements the Cartesian coordinate system of length, width and height, which, as the etymological origin of the word *dimension* implies, is used to measure the distance between two points.

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