# The Pattern Pieces

## Folder 10

# The Pattern Cluster

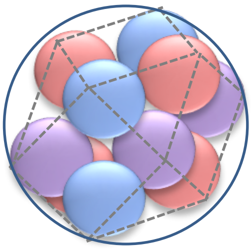
Origin's Shadow.

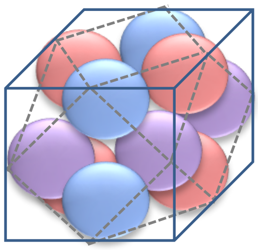
The Pattern cluster could be described as the *Philosopher's Stone* of the Pattern Science.

The properties of the cluster uncovered in this paper are profound: they include shadow features that point to the cluster's higher-dimensional origin, along with quantum-like characteristics such as superposition and atomic orbital shapes.

Remarkably, the cluster even aligns with a geometric interpretation of the Genesis creation narrative.

Cluster in Sphere





Cluster in Cube

*The cluster shape is a cuboctahedron.*

The Pattern Science is presented as a unified science of nature and Scripture, symbolized by the *Pattern Science Diamond*. This diamond illustrates the Pattern Science method: beginning with the *Principle of Patterning* at the top, continuing through the *Method of Modeling* in the middle, and culminating at the *Truth of Testing* at the bottom.

The systems engineering framework on which the Pattern Science is built requires the existence of a final cause – and the *Pattern cluster* fulfils precisely this role. The cluster is introduced as the shadow of a hypothetical, invisible original Pattern. This shadow cluster renders the unseen "substance" Pattern into three-dimensional view. Its innate Pattern properties reveal distinctive features of the higher-dimensional substance that manifest within the shadow.

Serving as the prime example of the *Principle of Patterning*, the cluster demonstrates how instances of models become models again, giving rise to further instances in a chain-like progression – providing proof of the principle itself.

*Folder 10* lays the foundation of the Pattern Science, unveiling its most basic features such as spinshape sequences (atom orbitals) and the duonity (superposition) state. These are further developed in other folders, including *Folder 18 The Pattern Cube*, *Folder 20 The Pattern Number System* and *Folder 30 The Pattern Science*.

*The Pattern cluster is a treasure that both reveals and protects the mysterious.*

*Folder 10 The Pattern Cluster* was published on *thepatternbook.com* website on 1 March 2026

# The Unit Cluster

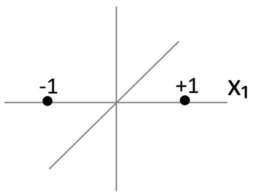
To determine the dimensionality of the *Pattern Cluster* of spheres, it is necessary to begin with a 0-sphere - the lowest object in the general sphere hierarchy. The point pair of the 0-sphere serve as the foundation for developing discrete, cluster-like objects consisting of real and imaginary point pairs at unit distances within coordinate sets. These coordinate points may then be used as the centres of unit cells of varying dimensions and shapes.

A *unit cluster* consists of unit cells (or points) positioned at unit distances along coordinates radiating from the cluster centre. A unit cluster is therefore a discrete object of hybrid dimensionality, since the coordinates may possess a different dimensionality than the cells located at the unit points.

## 0-Sphere

A 0-sphere is defined as a pair of points, representing a discrete 0-sphere on the x-axis according to the two real solutions of the equation $x_1^2 = 1$, namely $x_1 = +1$ or $x_1 = -1$. (Drawing on the right.)

0-Sphere




$x_1^2 = 1$

$x_1 = -1, x_1 = +1$

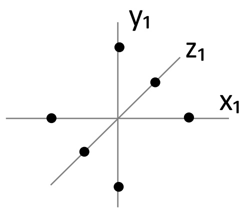
Solid lines are real coordinates

## Real Unit Cube

Pairs of points defined by $x_1^2 = y_1^2 = z_1^2 = 1$ can be drawn on the real $x_1$, $y_1$ and $z_1$ axes, as shown on the right.

Note that the set of 0-sphere points, satisfying $x_1^2 = y_1^2 = z_1^2 = 1$, corresponds to a discrete real cube, expressed as $x_1^2 + y_1^2 + z_1^2 = 1$. Such a cube may be referred to a *real unit* cube.

Real Unit Cube




Real point pairs

$x_1^2 = y_1^2 = z_1^2 = 1$

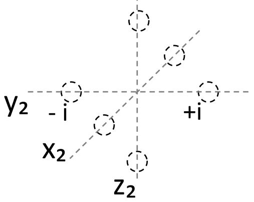
## Imaginary Unit Sphere

Pairs of points defined by $x_2^2 = y_2^2 = z_2^2 = -1$ can be drawn on the imaginary $x_2$, $y_2$ and $z_2$ axes, as shown on the right. The solutions in each case are +i and -I, indicated by the dotted (circle) points.

Note that the set of 0-sphere points satisfying $x_2^2 = y_2^2 = z_2^2 = -1$ corresponds to a discrete imaginary sphere, expressed as $x_2^2 + y_2^2 + z_2^2 = -1$. Such a sphere may be referred to an *imaginary unit* sphere.

It is important to note that the coordinate axes of the imaginary unit sphere are labelled differently from the those of the real coordinate system. This distinction arises because a 90⁰ offset between real and imaginary axes is necessary when the two coordinate sets are merged into an overlaid system.

Imaginary Unit Sphere




Imaginary point pairs

$x_2^2 = y_2^2 = z_2^2 = -1$

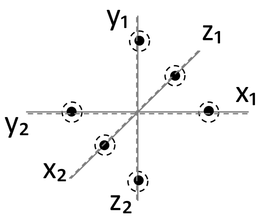
(e.g. $y_2^2 = -1$: $y_2 = -i$, $y_2 = +i$)

Dotted lines are imaginary coordinates

## Discrete SphereCube Unit Cluster

The overlapping points on the coordinates of the discrete real cube and discrete imaginary sphere together form a *discrete spherecube*. A discrete spherecube is a four-dimensional cluster object, defined by all points that lie at a constant distance from the origin of the coordinate system.)

Discrete SphereCube

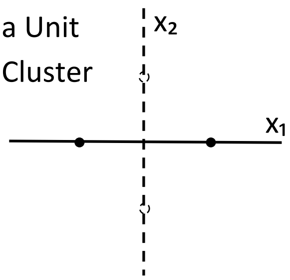



The overlaying unit points of the real cube and the imaginary sphere.

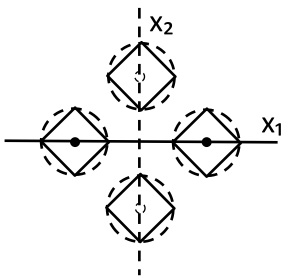
## Unit Cluster Cells

Unit cells of varying dimensions and shapes can be placed at the unit points of unit clusters. Each unit cell has a diameter of one (1) and may be either real (represented by solid lines) or imaginary (represented by dotted lines). The centre points of all cells lie unit distance along the coordinates radiating from the cluster centre. Spherecube unit cells on the x-plane are shown on the right by their cross-sections. These spherecube cells are formed by the superposition of imaginary spheres and real cubes.

The x-Plane of a Unit Cluster




Unit Cells of the x-Plane



# The Shadow Cluster

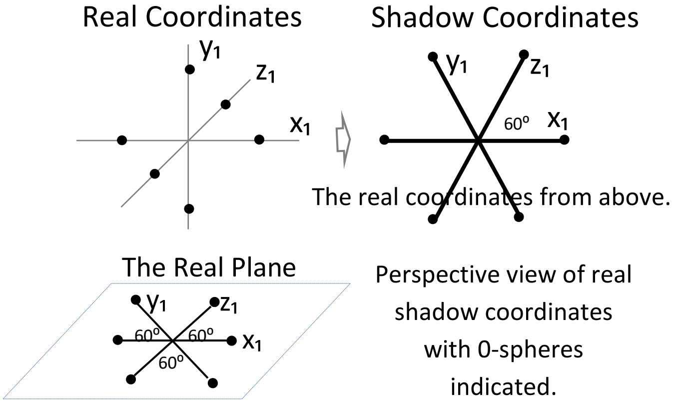
Shadow clusters are formed by compressing 3D real Cartesian coordinates into a 2D plane. The transformation process effectively ‘flattens’ one of the orthogonal axes - for example, the y-axis - which causes the angles separating the three real axes within the same plane to $60^{o}$. The angles between the real axes and their corresponding imaginary axes, however, remain fixed at $90^{o}$.

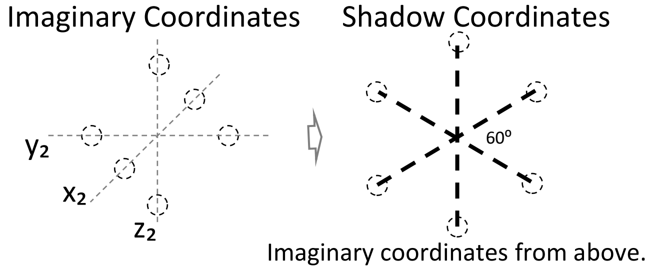
### Shadow Coordinates

A dimensional reduction from 3D to 2D can be achieved by decreasing the angles between the coordinate axes from $90^{o}$ to $60^{o}$. This reduction allows the three real coordinates to fit together within a single 2D plane, as shown on the far right. Three distinct manifestations of a real plane are possible, depending on which axis is ‘flattened’.

The imaginary coordinates could be flattened in the same way, yielding a shadow configuration in one plane. The resulting shadow coordinates of an imaginary plane are shown on the far right.

Note the $30^{o}$ offset between the real and imaginary sets of shadow coordinates.



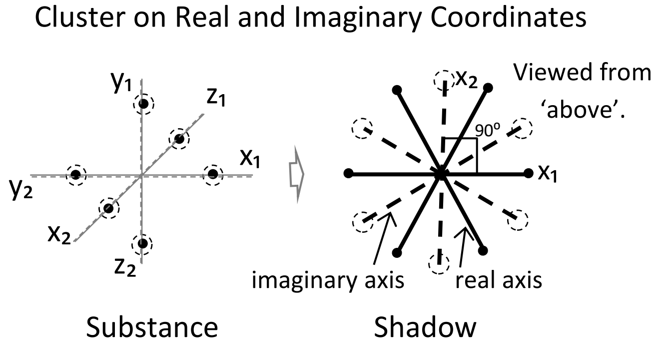




### Shadow Cluster on Real and Imaginary Coordinates

Unit point clusters on the real and imaginary axes can be overlaid. The drawing on the right illustrates the 4D combination of unit clusters, while the drawing on the far right shows their real and imaginary coordinate shadows within the same plane. Importantly, the real and imaginary axes always maintain their $90^{o}$ separations.

The real axes can be rotated continuously within the plane, thereby lifting or lowering their corresponding imaginary axes into the third dimension (in front of or and behind screen or paper).

The *Substance* and *Shadow* designations in the diagram distinguish between the 4D and 3D renditions of the cluster.

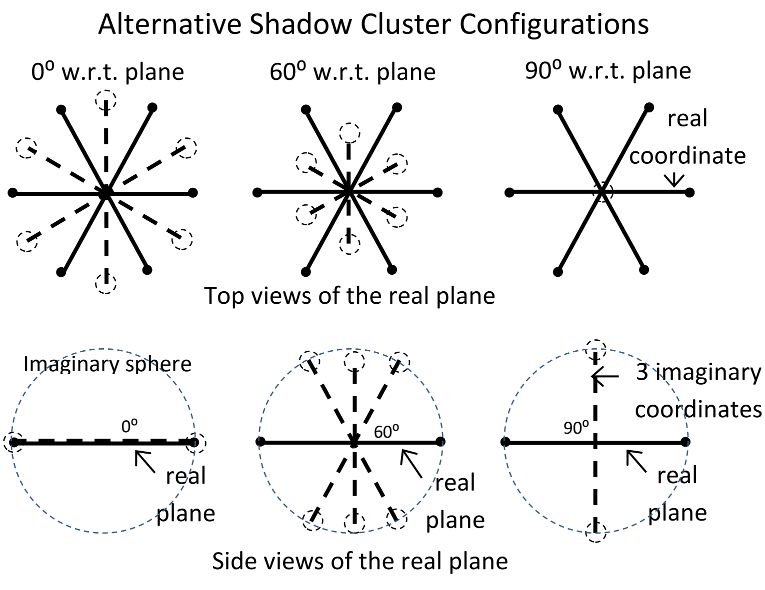



### Alternative Shadow Cluster Configurations

The imaginary axes of the combined configuration can be positioned at alternative angles with respect to the real plane. The resulting spherical shape traced by the rotating imaginary axes would resemble a dotted-line sphere.)

The configurations – at $90^{o}$, $60^{o}$ or $0^{o}$ – are shown in the drawing on the right. Of these, only the shadow cluster with the $60^{o}$ angle ((the middle diagram on the right) accommodates unit cells, spheres, or cubes at the unit coordinate points without intersection. *The Pattern Cluster of Spheres* on the next page illustrates this configuration.)

Notably, the angle between the real axes and the imaginary axes remains fixed at $90^{o}$.



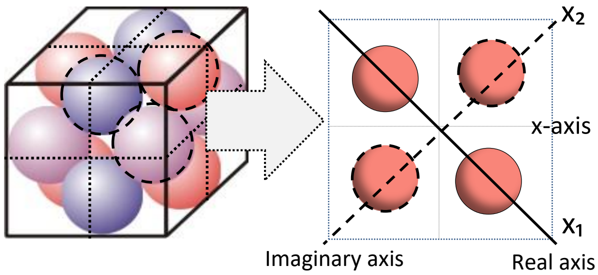
# The Pattern Cluster

The Pattern cluster of spheres aligns with the 60º-spaced coordinates of the shadow unit cluster shown on the previous page. The shadow cluster represents a 3D *shadow* with both imaginary and real components emanating from the 4D *substance* object. In the Pattern cluster version of the shadow cluster, sphere cells are positioned at unit points.

## The Cluster Planes

The Pattern cluster of spheres in its cubic orientation is shown on the right. The red spheres within the red plane of the cluster are displayed separately, with the $x_1$ (real) and $x_2$ (imaginary) coordinates indicated. The real and imaginary coordinates are offset by 45º from the Cartesian x-axis. A 45º rotation of coordinate system provides an alternative method for deriving the coordinates of the shadow cluster.

Cluster of Spheres    Red Plane



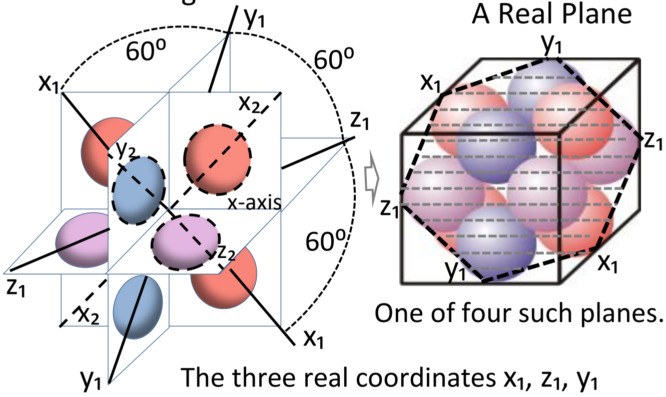

## The Shadow Cluster Coordinates

The drawing of the three orthogonal planes of the cluster (shown on the right) illustrates that the three real coordinates are spaced at 60º. The corresponding imaginary axes are at 90º, as required.

This configuration agrees with the unit shadow cluster of spherical cells that was derived on the previous pages through pure mathematical reasoning.

This result is remarkable because it suggests the existence of a 4D *substance* of which the Pattern cluster is a 3D *shadow*. Just as a human shadow reflects certain properties of the person who casts it, the shadow cluster inherits properties from its the 4D substance.

Three Orthogonal Planes    A Real Plane



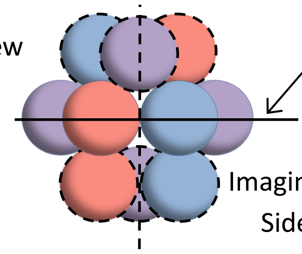

One of four such planes.

The three real coordinates $x_1$, $z_1$, $y_1$ (solid lines) are in the same plane.

## Cluster in Spherical Orientation

The real plane of the Pattern cluster of spheres in its spherical orientation is shown on the right. The imaginary space is orthogonal to the real plane and extends on both sides of it. A cross-section of the cluster, displayed below the main drawing, shows the real coordinates in one plane, with their imaginary coordinates positioned 60º relative to the real plane.

Cluster of Spheres in Spherical Orientation

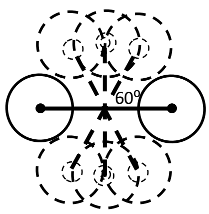



## The Pattern Cluster's Real Planes

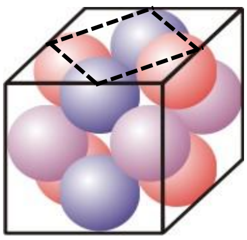
Altogether, four real hexagonal planes can be drawn within the Pattern cluster of spheres. The top edge of the real plane shown earlier is retained, and the additional three top edges of the other real planes are included in the diagram on the right.

From derived Pattern models, such as the Pattern cube, it is evident that the spaces enclosed by the four real planes appear to be real spaces – for example, Light-cones – while the eight vertex-spaces are imaginary spaces, referred to as Life-cones. Thus, the Pattern models generally manifest a combination of real (actual) and imaginary (potential) parts.

Cluster Coordinates in Spherical Orientation




Cluster of Spheres



The top edges of the four real planes are indicated by the dotted lines on the top face of the cube.

*The Pattern cluster embodies the real and the imaginary.*

# The Cluster Spinshapes

The configurations of the Pattern cluster are obtained by slicing the cluster of spheres at different angles. Each slicing produces a row of sphere arrangements, which are reflected in a table of possible configurations. The table consists of an inner column flanked by two symmetric outer columns. The configurations in the central column resemble atomic orbital shapes, which has led to the term *spinshape* configurations. These represent both the quantum spin number (**s**) and the quantum shape number **(k)**.

**Slicing the Cluster**

The Pattern cluster can be sliced at three different angles, as indicated by the dotted lines in the diagram on the right. Each slice produces a 2D cross-section, revealing a distinct sphere configuration.

These slices correspond to the configuration sets of rows 2, 3 and 4 of the table on the right. The number combinations shown in the slicing diagram - namely 1 + 1, 2 + 2 and 3 + 3 - refer to the number of spheres in the central (inner) column of the table. The remaining rows are derived from these three fundamental rows.

Slicing the Pattern Cluster

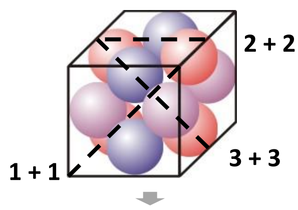
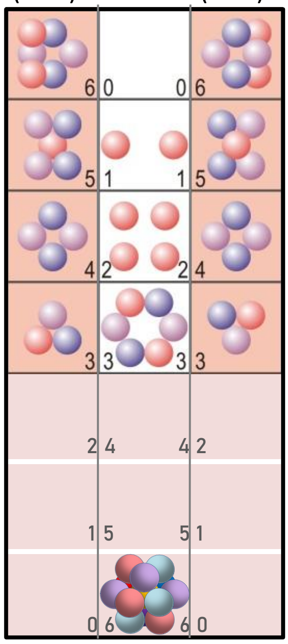



Table of Configurations

Outer (Half) Inner Column Outer (Half)




(a + b) = 6 & 6 = (b + a)

Cluster Configuration Sequence

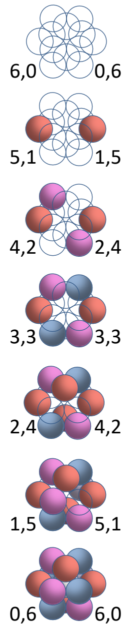


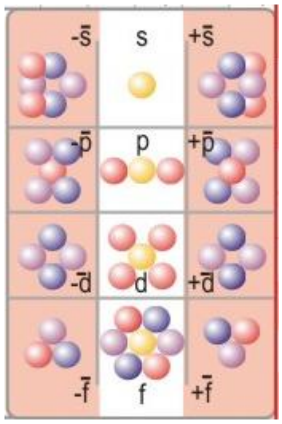

**Table of Configurations**

Each row of the table on the right presents a symmetric pair of sphere configurations of the cluster. The table is also referred to as the *Pattern code*. The combined cluster configuration for each row is shown on the far right. The number next to each configuration indicates the number of spheres in each position. The values in both the left and right halves of the table follow a synchronously decreasing and increasing number sequence – known as the SDI sequence. The decreasing sequence can be generalized with variable *a* and the increasing sequence with variable *b,* yielding a symmetric equation pair (a + b) = 6 & 6 = (b + a). In every row of the table, the sum of the *a* values and the *b* values equal 6.

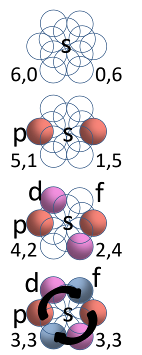
**Atom Orbitals**

The atom orbitals shown on the right display the first four rows of the table of configurations above. The central column resembles the first four electron orbitals of an atom. *(Note: a core sphere had been added to the middle column.)* The **s**, **p**, **d**, and **f** orbitals are illustrated in *Folder 1 The Pattern Basics* on page PP1:13. The complete inner column of the table resembles the sequence of electron orbital shapes: **s**, **p**, **d**, **f**, **g**, **h**, and **i**, These orbital configurations represent both the spin quantum number (**s**) and the shape quantum number (**k**) and are therefore referred to as *spinshapes*. The central column on the right reflects standard atomic orbitals, while their complements in the side columns are labeled *complementary orbitals*. A description of these orbitals in *Folder 5 The Cosmos Code* refers to them as *invisible orbitals*, due to their positions in the imaginary vertices (Life-cones) of the Pattern cube.

Atom Orbitals




Spinshapes




First four rows only – core included.

**Spinshape Phases**

The sequence of spinshapes represents phases of the cluster cycle, rotating from all *potential* (empty) spheres at the top to all *actual* (filled) spheres at the bottom. The first four spinshapes, - **s,p,d,f** - are shown on the far right. Note the two arrows in the bottom spinshape, which indicate the spins.

**Quantum Spin Calculations**

Quantum spin calculations, described in *Folder 20* on page P20:8, use the numerical values from the sequence in the table above. The calculation of quantum spin probabilities is based on these same values.

# The Cluster Twists

A twisted band with both ends connected forms a Mobius band, which is characterized by having only one continuous surface – its inside and outside are the same. A duonity spinshape sequence resembles a twisted *connected* Mobius band, whereas a disduonity spinshape sequence is more like a twisted band whose ends remain *disconnected*.

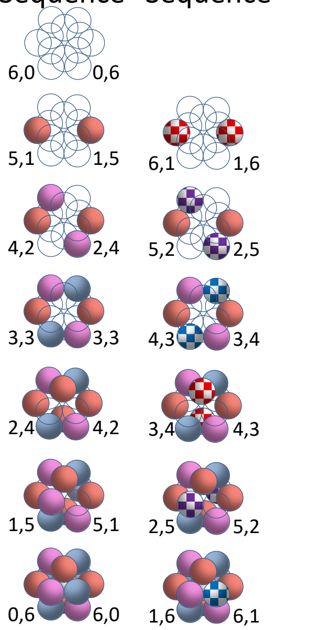
### Disduonity and Duonity Spinshape Sequences

The Pattern cluster's spinshape sequence (shown on the right), which transitions from entirely *potential* (empty) spheres at the top entirely *actual* (filled) spheres at the bottom, represents a disduonity sequence.

In contrast, the sequence pictured next to the disduonity sequence has one fewer spinshape phase and contains a mixture of potential and actual spheres within each spinshape. This duonity sequence resembles a Mobius band. (Duonity is defined as the *two-oneness* of things, a kind of superposition. Disduonity is defined as a *two-ness* of things, representing a kind of collapse.)

Another representation of the duonity spinshape sequence can be found the round Jacob's Tree in *Appendix 1*, whereas the disduonity sequence is illustrated by the straight Jacob's Tree. Note that the tree reflects an inverted sequence.

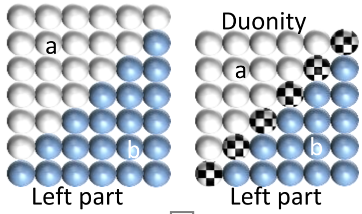
Disduonity Spinshape Sequence Duonity Spinshape Sequence




### Linearized Spinshape Phases

The two diagrams on the right show the left spheres of both the disduonity and duonity spinshape phases arranged in a linearized fashion. For simplicity, only two colours are used: white spheres represent the *a* values and the blue (dark) spheres represent the *b* values of the equation (a + b) = c. In the duonity diagram, the dotted spheres indicate a superposition of *a* and *b* values.

Linearized Spinshape Phases



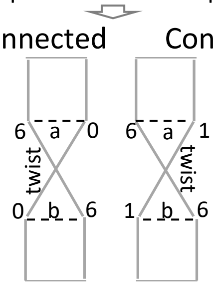

### A Disconnected Band and A Connected Band

The linearized sets of spheres can be compared to a disconnected twisted band and a connected twisted band, as shown on the right. The distinction between disduonity and the duonity states is marked by the different *a* and *b* values.

Each spinshape phase represents one stage in a cycle. The duonity cycle is referred to as a *uni-SDI* because it is unidirectional, whereas the disduonity cycle is referred to a *bi-SDI* because it is bidirectional.

For further detail, see page P20:10 of *Folder 20 The Pattern Number System*.

Disconnected Band Connected Band



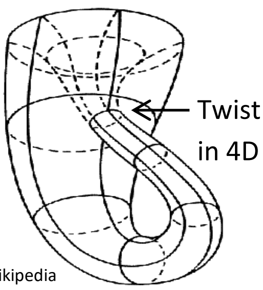

**Antics** A fictitious ant could traverse both sides (*a* and *b*) of a (connected) Mobius band without ever crossing a boundary. On a disconnected, though still twisted, band, however, the ant would be confined to one side or the other.

### Klein Bottle Twist

A 3D Klein bottle can be understood as a symmetric pair of connected Mobius bands that are 'glued' together along their sides. It incorporates a twist in 4D.

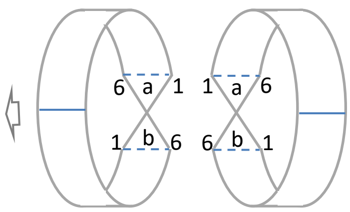
Its topology is conjectured hereunder to be equal to two connected spinshape sequences that are twisted in 4D.

Klein Bottle




Wikipedia

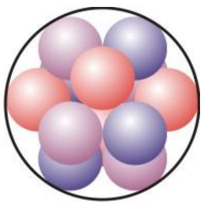
Connected Mobius Band Pair




### The Cluster Twist

In the case of the cluster, the connected twisted spinshape sequences referred to above may be understood as the seed and the fruit of the Jacob's tree (see illustration in Appendix 1). The seed and the fruit of the round (duonity) tree can be compared to the inside and outside of the Klein bottle, which - due to the twist in 4D – are in fact one continuous side. By analogy, the cluster appears to embody a twist in 4D, much like the Klein bottle.

Cluster in Sphere



# The Cluster of SphereCubes

The Pattern cluster of spherecubes consists of twelve spherecube cells. A spherecube cell is a superposed 4D combination of a sphere and a cube. Its orthogonal projections are a sphere and a cube, analogous to how a regular cylinder casts orthogonal shadows as both a circle and a square. The cluster of spheres is one of the two orthogonal shadows of the cluster of spherecubes.

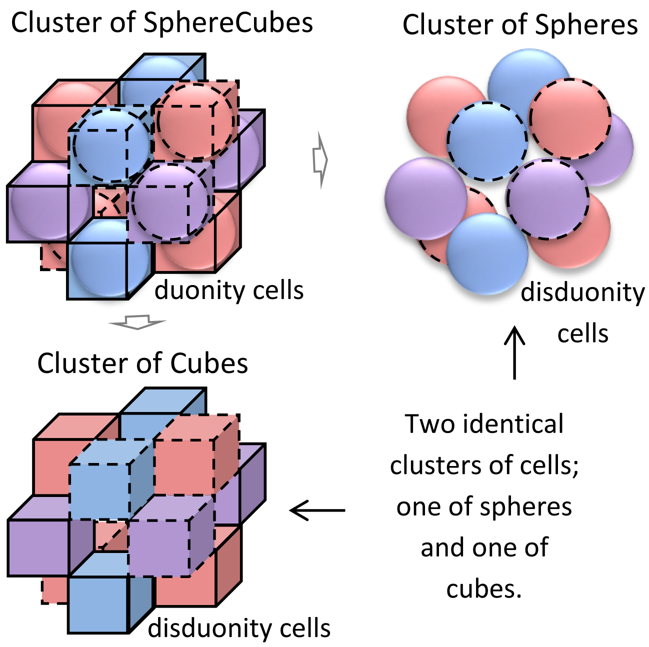
### The Cluster of SphereCubes Shadows

The two orthogonal shadows of the cluster of spherecubes are shown on the right. The cluster of spheres represent the spherical rendition of the spherecube cells and the cluster of cubes represent the cubical rendition. Each spherecube cell of the cluster embodies a duonity state.

This shadow concept differs from the shadow cluster described on page P10:3, as it pertains only to the cells of the cluster rather than their coordinates. The process of forming these cell shadows is called *disduonification*, which corresponds to a collapse in a quantum context.

The idea of higher-dimensional cell shadows is illustrated by the circlesquare shadow map and the spherecube shadowmap at the bottom of the page. A spherecube is a regular (duonity) hypercylinder, is derived from the circlesquare, which is itself a regular (duonity) cylinder.)

### Orthogonal Cell Shadows of the Cluster




### The Eden Cluster

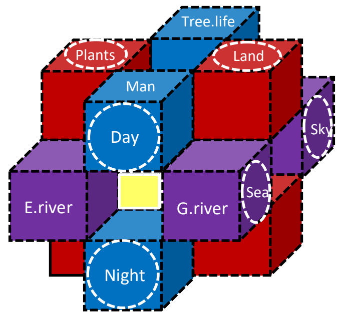
The Eden cluster of spherecubes, shown on the right, reflects the twelve spherical (time) elements of Genesis 1 overlapping the twelve cubical (space) elements of Genesis 2. (See *The Creation Map Guide* in *thepatternbook.com* for detail about the formation of the cluster, originally called the Eden Cube.)

Together, the twenty-four elements of Creation can be arranged across three planes: a blue plane, a purple plane, and a red plane.

The time elements form a loop - blue>purple>red>blue>purple>red - that 'visits' each face of the cluster in a six step (six day) chronological sequence.

The space elements form three orthogonal planes: a blue plane (4 blue elements), a purple plane (4 purple elements), and a red plane (4 red elements).

**The Eden Cluster**




### The Collapsed Eden Cluster

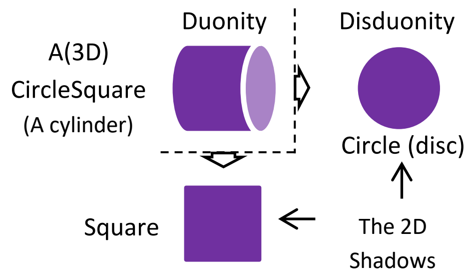
In the context of the Pattern Science, the Eden Cluster is a 4D duonity cluster of spherecubes that collapsed into two disduonity 3D clusters: one of spheres and one of cubes. In a biblical context, this collapse appears to symbolize the state of Creation after the Fall described in Genesis 3.

### Dimensional Analogues

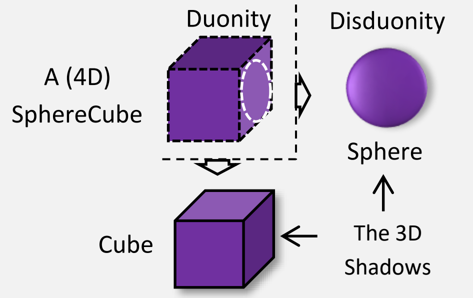
The two orthogonal shadows of a regular cylinder (a circlesquare) are a circle (disc) and a square (plate). By analogy, the two orthogonal shadows of a hypercylinder (a spherecube) are a solid sphere and a solid cube.

**A CircleSquare Shadow Map**

(a 3D analogy of a spherecube's shadows)




**A SphereCube Shadow Map**



# Appendix 1: Jacob’s Tree

Jacob’s Tree illustrates a seed *potential* that decreases in synchrony with the increasing *actual* fruit.

The tree is named after Jacob, who had twelve sons. In this symbolic model, a pair of sons is added at each of the six stages of growth, reflecting the progressive unfolding of the sequences.

Slicing the Pattern Cluster of spheres at different angles yields the spinshape sequence of sphere configurations of the tree.

The two versions of the tree’s synchronously decreasing and increasing (SDI) sequences illustrate its duonity and disduonity states.

In the duonity state, the tree grows in a circular (round) form in six stages (see diagram below). In the disduonity state, it grows linearly (straight) in seven stages (see diagram on the right).

### Duonity state (connected):

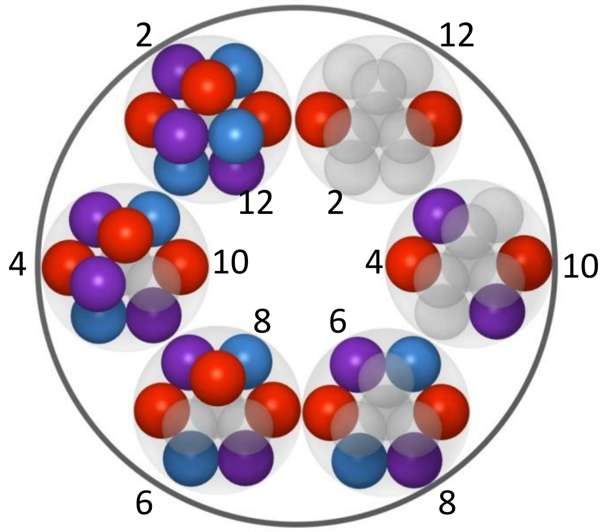
The tree grows in a circular form across six stages (see diagram below). It is represented as the round tree, with fruit values increasing (2,4,6,8,10,12) and seed values decreasing (12,10,8,6,4,2).

### Disduonity state (disconnected):

The tree grows in a linear form across seven stages (see diagram on the right). It is represented as the straight tree, with fruit values increasing (0,2,4,6,8,10,12) and seed values decreasing (12,10,8,6,4,2,0).

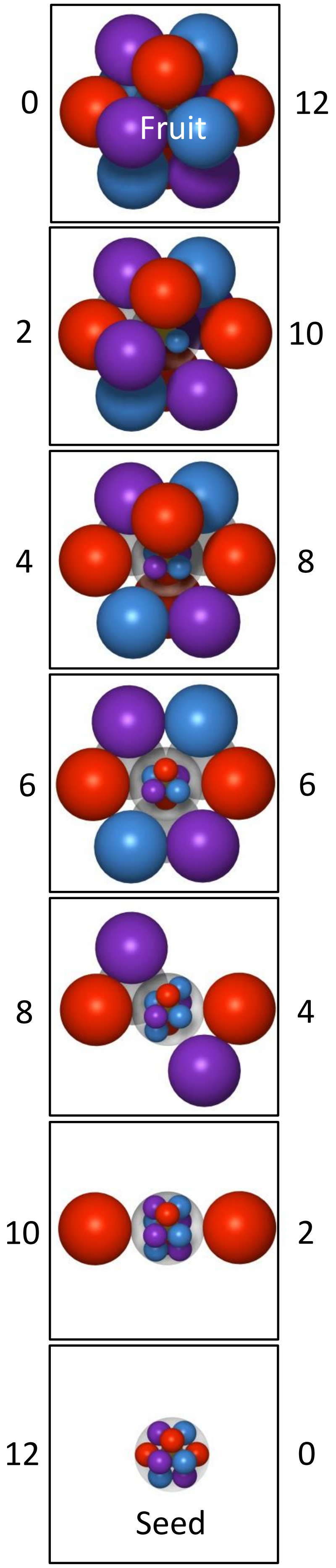
The round tree embodies a 4D Mobius-like twist, suggesting a higher-dimensional superposition, while the straight tree embodies the lower-dimensional collapsed state.

Round (Duonity) Tree




Seed-fruit superposition in six stages

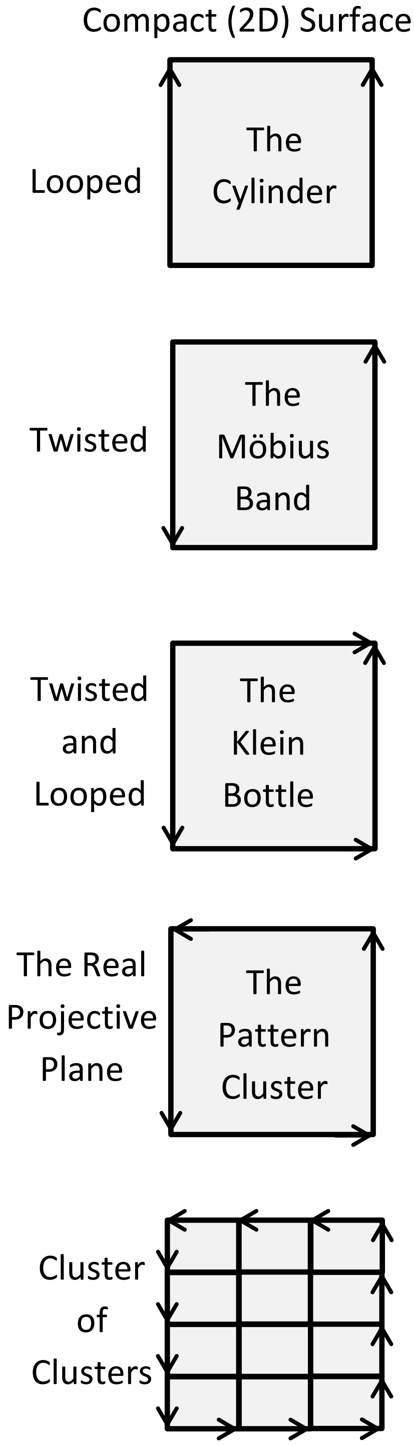
Straight (Disduonity) Tree



# Appendix 2: Twist of Twists

It is conjectured that the Pattern cluster configuration sequences represent a twist in 4D space, comparable to the twist of a Klein bottle. A twisted and connected bottle exhibits a one-sidedness, which contrasts with the two-sidedness of a disconnected yet still twisted, bottle.

Topological compact surfaces are employed to illustrate the progression of the Pattern cluster within a topological framework.




## Topological Compact surfaces

Topology is a branch of mathematics concerned with the properties of spaces that remain unchanged under continuous transformations. A central focus is compact 2D surfaces.

## Cylinder

A cylinder is a compact 2D surface formed by gluing two opposite edges in the same direction. (See the arrows in the diagram on the right.)

## Mobius Band

In the Mobius band, the arrows point in opposite directions. This reversal produces a twisted cylinder, which is nonorientable and has only one side.

## Klein Bottle

By gluing together the unpaired edges of two Mobius bands, one obtains the Klein bottle. This compact surface is nonorientable and can be thought of as a 'twisted bottle' that requires 4D space for a proper embedding.

## The Pattern Cluster

It is conjectured that the untwisted edges of the Klein bottle's compact surface could themselves be twisted to represent the Pattern Cluster. (See *The Cluster Twist* at the bottom of page P10:6.)

Note the similarities between the Pattern cluster twist and the Pattern congruence described on page P30:14.

## The Pattern Cluster Twist

The Pattern cluster is represented, in the drawing on the right, by a compact surface like the real projective plane which twists in 4D.

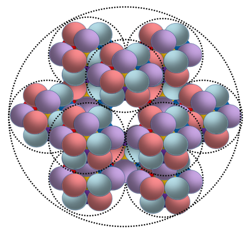
## The Pattern Cluster Twist of Twists

The Cluster fits inside a sphere and a cube, and can, therefore, be referred to as a spherecube. Its spherical rendition is a 'sphere of spheres' so the spherecube version of the cluster may be described as a spherecube of spherecubes.

The compact 2D representation of a spherecube of spherecubes is conjectured to be a tiled compact surface consisting of twelve tiles (illustrated on the right). This compact tiled representation embodies a twist of twists.

Finally, a cluster of clusters (the spherical rendition) is illustrated on the right.

Cluster of Clusters



# Appendix 3: Origin of the Cluster

The 3D shadow cluster configuration represents a kind of bridge between space and hyperspace. Its characteristics suggests a fundamental discreteness of higher-dimensional objects - objects that, paradoxically, become simpler in higher dimensions due to their increasing levels of duonity which is a kind of superposition.

The development scenario outlined below offers an intriguing perspective on the possible origin of the Pattern. The explanatory power of the Pattern Science across diverse phenomena may, perhaps, indicate that this scenario holds truth.

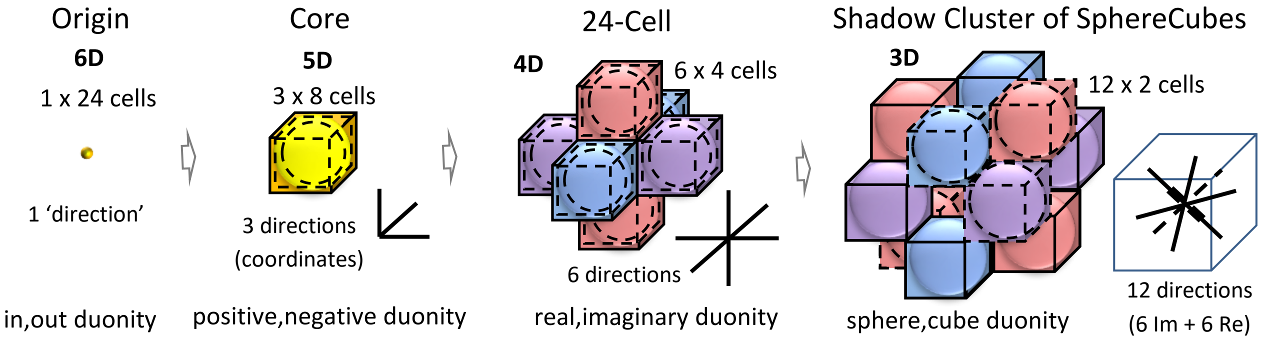
**Origin**

The origin of the Pattern cluster may be conjectured by projecting an increase in the density of both the coordinates and cells of the shadow cluster. The number of cells - such as spheres and cubes – is constant at 24.

**Pattern**

The unfolding of structures from the origin reveals that each preceding object *contain*s the subsequent object(s). Each earlier shape, therefore, serves as a kind of pattern – or mould – for the next shape.

Shadow Cluster Development Scenario




Note that each coordinate points outward from the origin. Also note that dotted lines represent imaginary cells.

The drawing above indicates a hierarchy of duonities in higher dimensions. The origin, therefore, encompasses the duonities of *in,out, positive,negative, real,imaginary* and the *sphere,cube* forming the highest duonity level.

Each lower dimension represents yet another disduonity split.

**The Hyperspace Theory**

In his book *Hyperspace,* published by Oxford University Press, Michio Kaku explains that clay (matter) can be shaped by a mould that possesses symmetry. *"Then the clay will also inherit the symmetry of the mold."* (Page 143).

*He further notes: "The advantage of the hyperspace theory is that the Yang-Mills field, Maxwell's field and Einstein's field can all be placed comfortably within the hyperspace field like pieces in a jigsaw puzzle."* (p. 26).

In the drawing above, the core can be seen fitting inside the 24-cell, and the 24-cell fitting inside the shadow cluster - like pieces of a 3D puzzle. The shadow cluster, therefore, represents a superposed 24-cell-type object in 4D, which could be one link in a chain of objects extending from the origin in 6D, as postulated in the drawing.

**The 24-Cell**

The 4D 24-cell (see drawing above) fits perfectly inside the shadow cluster, just like a mould fits inside the clay.

Its representation shows overlapping real (solid lines) and imaginary (dotted lines) spherecubes as the 4D solids on the 4D axes. The six spherecubes yield 12 cells, and the real,imaginary distinction doubles this to 2 x 12 = 24 cells. The 24-cell may thus be described as a *discrete unit 4-spherecube*.

The 24-cell is a regular figure in four dimensions (the sixth polytope) whose 3D analogue - or shadow - is the semiregular cuboctahedron, as described in *Shadows of Reality* by Tony Robbin (Yale University Press).

Together, the 24-cell and the shadow cluster beautifully illustrate the Pattern idea: that a hyperspace object could serve as the Pattern - or mould - for phenomena in lower dimensions.