



HOW TO DELIGHT YOUR MIND WITH KEPLER'S SNOWFLAKE

For Lyndon LaRouche's 91'st Birthday: A gift of slightly more than nothing.

By Pierre Beaudry, September 9, 2013.



“While anxiously considering these matters, I crossed over the bridge, mortified by my incivility in having appeared before you without having a New Year’s gift...Just then, by a happy occurrence, some of the vapor in the air was gathered into snow by the force of the cold, and a few scattered flakes fell on my coat, all six-cornered, with tufted radii... Here, indeed was a most desirable New Year’s gift for the lover of Nothing.”

Johannes Kepler, *The Six-cornered Snowflake*.

FOREWORD

I ended my last report on the question of water, because it dawned on me, then, that if water had the power to transform cosmic and solar radiation into life on Earth, such a process of axiomatic power had to be built into that precious liquid for some reason, and that, somehow, it had to do with the future; but how?

This question brought me to investigate different ways in which water is oriented to the future and how it could express an axiomatic transformation which takes place between living processes and non-living processes, and that in doing so, water had to be related to fire as the necessary epistemological underpinning for the **NAWAPA-FUSION ENERGY** project.

Then, my surprise was to discover that the answers to my questions might be found in two studies by Johannes Kepler: *The Six-Cornered-Snowflake*, and the treatise on *Optics: Paralipomena to Witelo & Optical Part of Astronomy*. This report on axiomatics of spherics has three sections:

1. THE OCTAHEDRAL MOTHER OF THE SNOWFLAKE
2. THE SPHERICAL HONEYCOMB GRANDMOTHER OF THE SNOWFLAKE
3. THE FAILURE OF PERCEPTION: FIRE IS TO WATER AS WILLPOWER IS TO MEMORY

1. THE OCTAHEDRAL MOTHER OF THE SNOWFLAKE

“Having examined all the notions that occurred to me, I believe that the cause behind the six-cornered shape of the snowflake is not other than the one responsible for the regular shapes and the constant numbers that appear in plants.”

Johannes Kepler, *The Six-cornered Snowflake*.

What Kepler investigated in *The Six-Cornered Snowflake*, was the reason why the roundness of a drop of water-vapor should become transformed into the jagged beauty of a six-sided winter butterfly. What he was searching for was not simply what gives the snowflake its shape, but what the nature of the transformation between life and non-life represents. This was a typical epistemological question that Nicholas of Cusa had posed with respect to the truth that needed to be reinvestigated in all matters of scientific discoveries, as Kepler did. Cusa and Kepler’s question was: what is the nature of the relationship between the sphere and the polyhedron, or between the circle and the polygon, which is so important to understand in the investigation of the relationship between living and non-living processes? They both knew that the relationship was of an axiomatic character in the domain of mind, but the idea was to discover how that axiomatic truth manifested itself in the domain of nature.

The greater part of Kepler’s study on the snowflake deals with the question of close packing of space by polygons and by polyhedra as a prelude to the more profound and ultimate question of axiomatic causality. Therefore, for anyone who investigates the mind of Kepler, the issue is not simply the question of form or geometrical close packing in space, but rather the question of transformation from one given axiomatic state of existence to a future state of existence, however short that existence may be. This performative incursion into the future was the intention behind what Kepler stated at the beginning of his investigation:



“Of the five causes just adduced, the first, second, and third assume that the formative faculty [i.e. creativity] makes a plan according to the thing being born, and draws up its lines of battle as the terrain allows. Since the struggle between hot vapor and cold air occurs on a plane and not in a body, the faculty chooses a shape that corresponds to plane surfaces rather than solid bodies.” (Johannes Kepler, *The Six-Cornered-Snowflake, A New Year’s Gift*, Paul Dry Books, Philadelphia, 2010, p. 105) So, Kepler asked:”Why, in addition, six-cornered? Is it because the hexagon is the first among regular figures to be truly flat, in that it cannot combine with itself to form a solid?” (*Ibidem*)

Figure 1 Snowflake. *“Like a poet hidden in the light of thought.”* (Shelley)

Here, we must go directly to the underlying “light of thought,” behind the “battlefield,” which is the terrain behind which the contraries enter into conflict with the hot rising and the cold sinking. Most people are satisfied to remain on the surface of things and conclude that the cause of the formation of the six-sidedness of the snowflake crystal is external to it and, therefore, must be found in the forces that act on it from the outside, such as temperature change between fire and water. Don’t be an environmentalist. That is the wrong way to look at it. The condition of the battlefield is never a decisive reason for victory or defeat. However, if you are thinking of the temperature change as being a shadow reflection of an epistemological characteristic, then more power to you.

After having gone through a lengthy reconstruction of the principle of the beehive, related to his original discovery of the Rhombic Dodecahedron and Tricantahedron, Kepler introduced the greatest moment of perplexity of his entire paper by asking what happens in the geometry of creative process when the mind is confronted with “*A conjecture worth nothing?*” This question is worth all of our energy and focused attention, because if we were to pass on without noticing the importance of this “*nothing,*” we would have missed the essence of Kepler’s intention and the joyful treasure that lies within it. This question, without any doubt, is the central issue of Kepler’s axiomatic incursion into the future, and its importance merits that I reproduce, here, in totality; the answer that Kepler gave to this so-called “*conjecture worth nothing*” also has the character of “*vicarious hypothesis.*” As Kepler said:

“While I wrestle with these considerations, and while reason requires the radii to be disposed in every direction, something occurs to me that I have watched with wonder many times before: The little stars are not spread on a flat surface as they first begin to fall, but are held up by some little part, and it is only after a certain period of time that they settle into a plane. From this reasoning (as a kind of father) and from this experience (as a kind of mother), the following opinion of mine was born: As they fall, these little stars consist of three tufted diameters joined together crosswise at a single point, with the six resulting extremities distributed equally in a sphere. As a result, they fall only on three rough radii, and are propped up by the remaining three (which are opposite along the same straight diameters) – that is, until those bend on which the little star was being held up, and the ones remaining (which until now were left aloft) drop down onto the same plane, in the spaces between.

“I will pursue the implications of this conjecture as far as possible, and not examine until later whether it is in fact true. Otherwise, the untimely discovery of a mistake could keep me from my undertaking, which is to speak about Nothing.

“Let this, then, be the justification for our conjecture: Whatever the cause may be for the six radii, it is equally diffused in all directions, so that if the cold is the cause of the six radii, it must surround each particle of vapor equally on all sides, or at least all around at equal intervals; and if internal heat is the cause, it too must operate spherically in every direction, spreading from one and the same center.

“This, however, defers the question instead of addressing it. For it remains unclear why there are always six tufted radii joined at a common center, instead of five or seven.” (Johannes Kepler, [*The Six-Cornered-Snowflake, A New Year’s Gift*](#), Paul Dry Books, Philadelphia, 2010, p. 73 and 75)

This situation is perplexing for Kepler because, as we will see below, the key to understanding the transformation that the snowflake must go through comes from the incommensurable nature of God the Creator who is a triply-connected Holy Trinity. Thus, the vicarious mediation from the sphere to the octahedron, and from the octahedron to the hexagon, requires that the manifold of human creativity be also triply-connected in order to receive it, as in the Image of God.

Furthermore, Kepler is convinced that the universe as a whole has a built-in intention and a geometric design that he wants to discover beyond the physical presence of cold and heat, which can only come from the intermediary of the spherical generation of solid cells; as if God had intended to playfully demonstrate to bees that the way to build their sweet homes is similar to creating a spherical honeycomb for the Five Platonic Solids.

Kepler implied as much when he wrote: “If you ask a geometer what figure has three orthogonal diameters cutting each other at the same central point, which is to say in the shape of a double cross, he will say the octahedron, when opposite angles are connected. For the octahedron has six angles. Why then, does it happen that snowflakes, as they fall, and before they become flat, should imitate the very skeleton of the octahedron, with its three tufted diameters crossing at right angles? For if you drew twelve straight lines connecting the adjacent extremities of the radii, you would produce the complete body of an octahedron. What, then, causes condensation to occur in these three tufted radii rather than in a complete sphere?”



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(Johannes Kepler, *The Six-Cornered-Snowflake, A New Year's Gift*, Paul Dry Books, Philadelphia, 2010, p. 77)

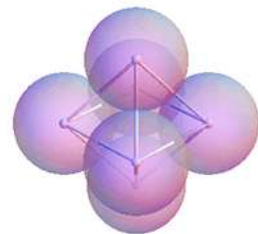


Figure 2 The Keplerian spherical principle of generation of the snowflake from the octahedron. The spaces in between the spheres are both square and triangular.

Figure 3 The spherical generation of the octahedron. The eight empty spaces on the faces of the octahedron are all spherical hexagons forming perfect cradles for rhombic keels of beehive cells. Don't let your eyes fool you; they are also the cavities out of which are generated the eight corners of the cube.

Kepler noted that both the octahedron and the snowflake had three diameters that intersected in their centers; however, the three diameters of the snowflake intersect everywhere at 60 degrees and in a single plane, while the three diameters of the octahedron intersect everywhere at 90 degrees to each other within a spherical solid. Geometrically speaking, therefore, this observation is very important, because it shows how the geometry of the hexagonal snowflake is generated in the inbetweenness of an

incommensurable transformation of spherical singularities causing the diameters to go from 90 degrees in the solid to 60 degrees in the plane. However, these angular limits do not explain why the sphere of water-vapor transforms the snowflake into a plane figure. Why not remain as a solid figure, like a tiny octahedron or some spherical solid? Why do things have to jump to a different geometry by going from the solid to the plane? But, there is another question behind this one.

More importantly, the question is what is the reason for the change from the curved to the straight, from the spherical to the polyhedral? This process of change shows that the simple explanation of a change in nature of physical condensation is not sufficient. You have to change the nature of the battlefield. There is, here, an axiomatic change which belongs to the domain of the mind, because any fundamental change that takes place inside of the physical domain, must take place in the mind first. Why? Because whatever is happening inside of the physical domain points to an intention. So, what is that intention, and how is it reflected in the passing from the octahedron to the hexagon?



Here, Kepler is very playful and insightful. He noticed that there were only two ways by means of which any number of spheres could come together in close packing, and he surmised that this might be the place where the angular change between the diameters of the octahedron and the diameters of the hexagon could be found. Note what happens when the three four-sided rhombic plane figures intersect each other in a single point to fit inside of a spherical hexagon formed by six spherical diameters. (**Figure 4**) This is the shape of space that bees use to form the cell bottom of their honeycombs, however, in this spherical composition, these rhombic cells form the roofs of the dodecahedron.

Figure 4 Dodecahedron being generated from inside the hexagonal rhombic keels of beehive-like cells. The angle of the dodecahedral rhombic cells is established from the angle of the Great Pyramid of Egypt, which also contains the Kepler triangle.

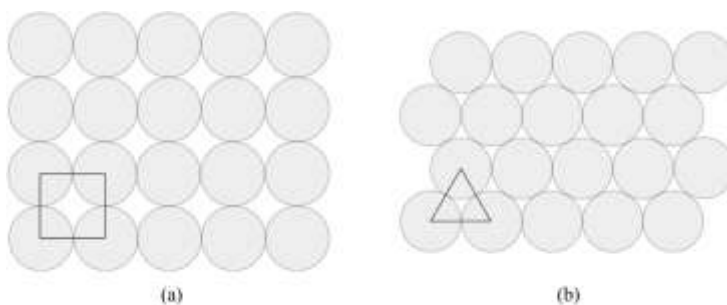
The change from the sphere to the octahedron is crucial to understand, here, because it represents not only the axiomatic jump between the curved and the straight, which is necessary to change geometry as in the case of an axiomatic change, but it also means bringing back to life the science of Ancient Spherics which had died before the appearance of the Greek Civilization. There is evidence that during the Neolithic period, the ancestors of the Scottish people were already constructing “Platonic” Solid Spherics in stone. Ancient Spherics probably came down from ancient Astronauts such as Atlas and Prometheus whom the gods of Olympus destroyed.



Figure 5 [Neolithic Spherical “Platonic” Solids](#) from Scotland (Between 3200 and 1500 BC.) Dorothy N. Marshall, "[Carved Stone Balls](#)," *Proceedings of the Society of Antiquaries of Scotland* 180, pp. 40-72, 1976/77. From left to right: the cube, the tetrahedron, the dodecahedron, the icosahedron, and the octahedron.

Although there may not be any physical evidence that the Ancient Egyptians had the knowledge to build the Five Platonic Solids from the sphere at the time when they built the pyramids, it is not simply a coincidence that the angular determination of the vortices of the dodecahedron reflect the angular determination of a sphere that is based on the angle of the Great Pyramid of Egypt. This Egyptian Sphere is but one aspect of the lost knowledge that existed before the recorded existence of the Platonic Solids, and which can only be proven to have existed by retrieving it, as I did here, by reconstruction.

After discussing the size of droplets of water that vapour assumes before the formation of snowflakes, Kepler makes an amazing incursion into the closed packing of water drops in the form of a square in the plane and the form of an octahedron in a solid. In doing this, he brings the question of limit to bear on the transformation not only from the polyhedron to the polygon, but also implicitly from the sphere to the polyhedron. Kepler wrote: “Next, suppose that these beads of vapor come into contact with one another in a particular pattern, namely square in the plane, cubic in a solid (as shown before). Each



little sphere will then be touched by six others, only four of which can be depicted here on the plane, while the fifth and sixth must be understood to lie above and below.” (*Ibidem*, p. 79) But then, by adding two more little spheres, a more condensed geometry of 60 degrees is added to the close packing of 90 degrees.

Figure 6 The two different ways of packing spheres at (a) 90 degrees and at (b) 60 degrees.

Thus, in the plane, the interstices between the two arrangements are squared in the first case (a), and triangular in the second case (b). However, in the solid state, the first case (a) should generate an octahedron of negative curvature, while the second case (b) should generate a tetrahedron of negative curvature. Next, look at the diameter lengths of the balls touching one another in (a) and in (b), and ask yourself: what is the angle of the diameters of the six balls of an octahedron? The answer is: a mixture of both 90 and 60 degrees. Why is this not happening in the formation of the six-cornered snowflake? Why is the snowflake not a solid? The answer to that question cannot be found in the octahedron, but in the spherical mother of the octahedron, or the spherical grandmother of the hexagon.

2. THE SPHERICAL HONEYCOMB GRANDMOTHER OF THE SNOWFLAKE

We have noted above, in **Figure 3**, that the spherical intervals left over from the generation of the octahedron were all of hexagonal forms. This is the only spherically generated platonic solid which exhibits the spherical presence of hexagons. What is implied, here, in the simple shadow projection of hexagonal shapes, is the result of the triune inter-connectedness of the spherical motion of the universe as a whole on itself; that is, the shadow of the integral motion of the Galaxy including the motion of the Solar System and the motion of the Earth as an expression of the idea of the Holy Trinity. This is how Kepler understood the universe and that is how he discovered the origin of things from that higher domain of transformation.

In other words, what happens in the higher domain of the universe as a whole when something passes from the sphere to the octahedron and from the octahedron to the hexagon? This is where Kepler turns to the integral sphere (*globum integrum*) as developed by Nicholas of Cusa on the Trinity by investigating the axiomatic relationship between the straight and the curved at the higher integrated level of triply-connected creativity:

“First, it was fitting that the nature of all things imitates God the founder, to the extent possible in accord with the foundation of each thing’s own essence. [The origin of light] For when the most wise founder strove to make everything as good, as well adorned and as excellent as possible, he found nothing better and more well adorned, nothing more excellent, than himself. For that reason, when he took the corporeal world under consideration, he settled upon a form for it as like as possible to himself. Hence arose the entire category of quantities, and within it, *the distinctions between the curved and the straight*, (emphasis P. B.) and the most excellent figure of all, the spherical surface. For in forming it, the most-wise founder played out the image of his reverend trinity. [The spherical is the image of the Holy Trinity] Hence the point of the center is, in a way, the origin of the spherical solid, the surface is the image of the inmost point, and the road to discovering it. The surface is understood as coming to be through an infinite outward movement of the point out of its own self, until it arrives at a certain equality of all outward movements. The point communicates itself into this extension, in such a way that the point and the surface, in a commuted proportion of density with extension, are equals. Hence, between the

point and the surface there is everywhere an utterly absolute equality, a most compact union, a most beautiful conspiring, connection, relation, proportion, and commensurateness. And since these are clearly three – the center, the surface, and the interval, they are nonetheless one, inasmuch as none of them, even in thought, can be absent without destroying the whole.” (Johannes Kepler, *[Optics: Paralipomena to Witelo & Optical Part of Astronomy](#)*, Translated by William H. Donahue, Green Lion Press, Santa Fe, New Mexico, 2000, p. 19)

Such is the nature of the proportionality and harmony distributed everywhere in the universe which comes to us in the form of a “Learned Ignorance” that Cusa investigated as the only form of true knowledge for the creative human mind. Why is this ignorance the only true form of knowledge? Because, man can never form a perfect knowledge of the universe and Learned Ignorance is the only form that is commensurate with the divine knowledge of principles, as if projected from the future.

At best, human knowledge is acquired through incommensurable proportionality and harmony between the straight and the curved. This is where the human mind gets its true axiomatic testing (as in the squaring of the circle by Cusa), and this is where Kepler made his most powerful discovery with respect to God’s mind, and the limitation of the human mind. Here is how Kepler described the necessary relationship between the curved and the straight:

“Now, God decided that quantity should exist before all other things so that there should be a means of comparing a curved with a straight line. For in this one respect, Nicholas of Cusa and others seem to me divine, that they attached so much importance to the relationship between a straight and a curved line and dared to liken a curve to God, a straight line to his creatures; and those who tried to compare the Creator to his creatures, God to Man, and divine judgments to human judgments did not perform much more valuable a service than those who tried to compare a curve with a straight line, a circle with a square.

“And although under the power of God this alone would have been enough to constitute the appropriateness of quantities, and the nobility of a curve, yet to this was also added something else which is far greater: the image of God the Three in One in a spherical surface, that is, of the Father in the center, the Son in the surface, and the Spirit in the regularity of the relationship between the point and the circumference. For what Nicholas of Cusa attributed to the circle, others as it happens have attributed to the globe; but I reserve it solely for the spherical surface.” (Johannes Kepler, ***Mysterium Cosmographicum, The Secret of the Universe***, Trans. A.M. Duncan, Abaris Books, New York, 1981, p. 93)

The point to be made, here, is that it is in this difference between the curved and the straight that is located the true measure of the growing universe, not in any compass or ruler. In other words, it is in the singular incommensurable discontinuity of the change between curved and straight that the human mind reaches to the apparent limit of his mind, and that the power of such a truth can be communicated universally and performatively through this poor handicap of sense perception.

Therefore, it is through this triply-connected universal motion of the three harmonically ordered octahedral right angle diameters that each and all of the falling snowflakes become flattened by condensation, as water becomes transformed successively from three incommensurable dimensions of the sphere, the octahedron, and the hexagon, from the top-down.

In fact, one can actually observe the results of such incommensurable changes by examining the transformation between the rhombic formations that Kepler had identified in the making of the closed packing of space in the roomy honeycombs, the only way that nature knows how to transform a plane surface into a solid, without leaving any unoccupied empty space. Thus, the honeycomb demonstrates how nature really hates the Newtonian idea of empty space. The same principle applies also in optics whereby the source of light is always rounded, but its shadows always straight and flat. However, the fundamental question of Kepler remains to be answered. I recall the question for you:

“What, then, causes condensation to occur in the three tufted radii rather than in a complete sphere?” (Ibidem p. 77)

Look at the integral Egyptian Sphere of **Figure 8** as not only the generating mother sphere of the Five Regular Platonic Solids, but also as the grandmother of the hexagon. This ten-circle sphere was originally discovered and published by me in the *21st Century Magazine* during the summer of 2004. It can be found on-line in the publication section of my website < <http://www.amatterofmind.us/> >, under the title: [PYTHAGOREAN SPHERICS: THE MISSING LINK BETWEEN EGYPT AND GREECE.](#) Those who want to play with something that is epistemologically dangerous should read this report.

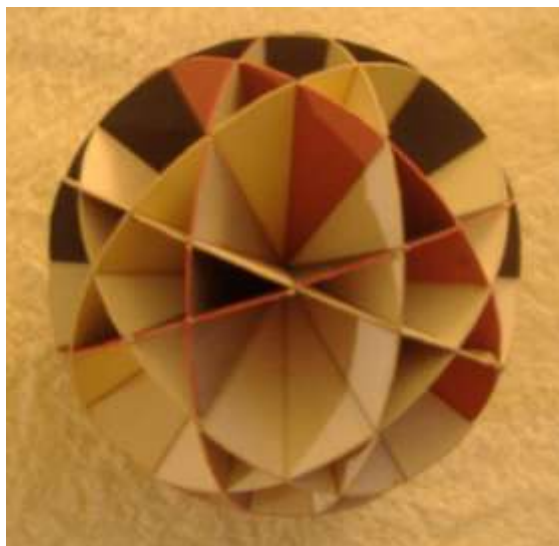
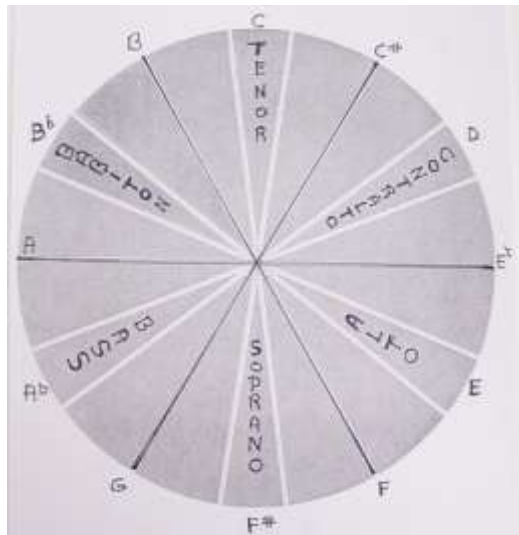


Figure 8 The **Egyptian Spherical Honeycomb** and her **Polyhedron Daughter**. The five-sidedness of life and six-sidedness of non-life reflected in the integral Egyptian Sphere as the generating memory of the Great Pyramid of Egypt and of the Five Platonic Solids. Can this spherical geometry ultimately explain why the snowflake is six-sided? Can it also show how Bel Canto is the honey of angels?

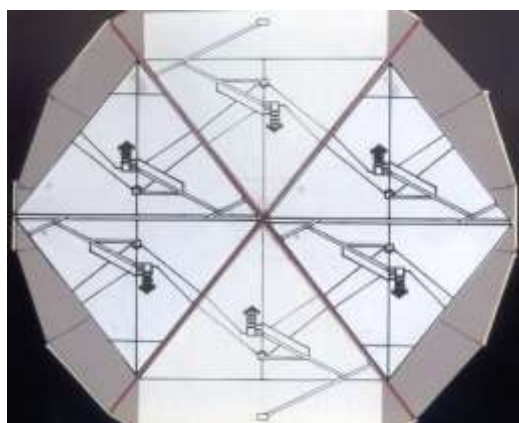


The spherical composition of this integral sphere is formed by sixty equally spaced diameters generating twenty spherical hexagons. Note that in order to be equally spaced inside of the sphere the sixty diameters must be tempered in the circular plane. (Figure 9) The tempering is exemplified by the spreading open of the angular radii of the six register shifts pertaining to the six human voices. These six “Spherical Vibratos” on the plane circles are identified by the formation of twelve pentagrams on the sphere’s surface. The regular angular determination of all of the radii of the ten great circles also determines the construction of the Great Pyramid of Egypt, and the singularity of passing from the pentagrams to the hexagons is exemplary of the cognitive passage of going from life to non-life.

Figure 9 The Six Human Voice Register Shifts locate on each great circle the position of the twelve pentagrams.

Therefore, this unique sphere, which could have been built in ancient times, but was never reportedly found, and that Kepler had apparently no knowledge of during his own lifetime, is the only spherical singularity which, to my knowledge, can explain how the snowflake can be generated from the sphere, via the octahedron. Therefore, say hello to the geometrical grandmother sphere of the snowflake and of Bel Canto voice register shifts! I know this is the equivalent of walking backward from within the future, but have no fear; that is the only way to go forward.

The crucial insight into the future that Kepler manifested in the transformation of the three diameters of the octahedron and the three diameters of the hexagon reveals its true geometrical origin at this point.



A similar process of transformation of sixty diameters forming the *Egyptian Spherical Honeycomb* takes place between the ten great circles of that sphere. The transformation of the angular equality of these sixty diameter-angles into golden section angles on the surface of the sphere is at the origin of the generation of both the six-sidedness of the snowflake and of the five-sidedness of the pentagon. As Cusa demonstrated, it is such a spherical principle of geometry which is at the origin of life and non-life in the universe as every created being is formed from the incommensurability between the curved and the straight.

Figure 10 Hexagonal close packing of the Great Pyramid cross-section. Each Great Pyramid triangle is formed by two Kepler triangles. The rhombic form of two pyramidal triangles connected base to base is the required angular determination to generate the keels of rhombic cells forming the dodecahedral vertices. Thus, the spherical hexagonal keels of the beehive cells and the rhombic dodecahedral vortices

are generated from the same **Egyptian Spherical Honeycomb**, as will be the future mother of the six-sided snowflakes.

**3. THE FAILURE OF PERCEPTION:
FIRE IS TO WATER AS WILLPOWER IS TO MEMORY**

The Author's Epigram

Upon his eyes, and his treatise on the eyes.

Eyes:

O dear mind, we have lost our sharpness, while the lights of the true
We have sent to your threshold, through our glazing.
Without this marriage, you would remain blind: of the work.
Give some return to your partners: give, sweet sister!

Mind:

What should I do for those in distress? When did an
implacable hour
separate me far from your hospitality?

Eyes:

Snatch us away from darkness; lead us to whatever light you
will go to;
And from whatever fear of death you lack, deliver us also.

Mind:

As far as possible, I shall do it; only let fame favor the
speaker;
I shall make you mortals eternal with my writings.
Here also I bring back the losses that you have born for me;
And here I shall cast rays upon its brilliance, even with the
blemishes." (Johannes Kepler, [*Optics: Paralipomena to
Witelo and the Optical Part of Astronomy*](#), Translated by
William H. Donahue, Green Lion Press, Santa Fe, New Mexico,
2000, p. 13)



Figure 11. Johannes Kepler (1571-1630)

Fire and water relate to each other like willpower relates to memory, in the same proportion that *Mind* relates to *Eyes*. The Epigram that Kepler wrote for his treatise on Optics is the best demonstration of this performative will-memory function. These are only some of the forgotten things [*paralipomena*] that Kepler recuperated in the optical experiments of his *Paralipomena to Witelo*. These Kepler experiments have such an axiomatic significance not only for astronomy but also, most emphatically, for the domain of epistemology that Kepler had identified, for professional reasons, as geometrical astronomy. Here, like the case of the snowflake, these omitted or forgotten things, imply much more than meets the eye.

Take, for instance, Kepler's experiment of the relationship between *Eyes* and *Mind*. What is the axiomatic nature of the underlying relationship between the two? The *Eyes* see linearly while the *Mind* sees non-linearly. What is the axiomatic significance of the change between the straight and the curved, as it takes place in the projection of sunlight through a sphere of cold water? Recall what I had discussed with Kepler a few years ago, in my report on [LANTERNLAND](#) and apply it to the axiomatic domain of mind as it forages into the future.

As Kepler observed in *The Author's Epigram* at the beginning of his treatise on [Optics](#), it is one thing to consider objects that are set before our sense perception apparatus, yet it is quite another to examine the medium through which light passes through our sense perception apparatus, and comes to be either reflected or refracted back in an orderly way through the human mind. It is of this second category of observation that I intend to discuss next as a matter of axiomatic principle.

Think of this experiment as amatterofmind in the sense that Lyn developed in experiencing "*Walking Inside the Future*," and as a process of performing a future that is shaped by change as it goes forward from the straight to the curved and from the curved to the straight again. Epistemology always demands that a discovery be made from the top-down and from the curved to the straight, because no increase in energy-flux density is ever achieved without this kind of incommensurable leap. Thus, Aristotle and Euclid never graduated to the level of the mind because their Q.E.D. method of sense perception always proceeds from the bottom up and never reaches the highest level.

Ask yourself: why is the sphere the origin of the polyhedron and not the polyhedron the origin of the sphere? Why is the circle more perfect than the polygon? Could a straight line generate a curved line? Even in the case of the catenary curve, the process of generating goes through the rotating inversion of a tangent motion. In other words, from the standpoint of the human mind, the sphere is primary to the polyhedron because the truth of it can be demonstrated by construction. And, therefore, as Lyn used to say: "Believe nothing that for which you cannot give yourself a constructive proof."

However, how can fire (Tetrahedron) and water (Icosahedron) be demonstrated to function together by construction? What happens when you think of water as being from the galactic past, and fire as being from the galactic future, as memory is to willpower? The answer is found by walking inside the future, as Lyn applies his foresight to both memory and will:

"Insofar as we know presently, the human species is the only form of life which has the capability of fore-knowledge of future events and related developments. A very much smaller fraction of that total human population has shown active insight into the implications of that fact. Nonetheless, despite the latter fact of the present situation, the fact that some living human persons manifest such a capability with significant facility, is sufficient to define that capability as being a universal principle of our said species. The crucial distinction of those actively prescient of their own such capability, is that they have some significant degree of actual knowledge of the practical implications of the special intellectual capabilities involved. Hence, I identify such persons as 'Walking Inside the Future.'" (Lyndon LaRouche, [HOW THE FUTURE BUILDS ITS PAST](#), EIR, August 23, 2013, p. 9)

Apply this to Kepler's insight into the functional geometry of the eye in relationship to the mind. Return to Kepler's experiment of the relationship between *Mind* and *Eyes* in the **Author's Epigram** stated above and note how the dialogue is walking into the immediate future ahead. As a matter of fact, walking inside the immediate future ahead is precisely the way that every discovery is made, blindly, as it were; because you really don't know where you are going to end up. However, the only leg you have to stand on is the truthfulness of what you can perform in changing someone else by saying what you are doing to him as you are changing him.

The following Kepler experiment demonstrates how this performative principle is involved in the form of a discovery of the future, as it is actually being shaped by an axiomatic change between the curved and the straight with the process of light going straight from a perpendicular flat scene into a spherical water bowl, and then, coming out straight again as an inverse projection onto a white paper screen located behind the bowl. The point that Kepler is making is that the experiment with the sphere is not only the most fitting image of the Holy Trinity, as he stated above, but that it is also the archetype of light and of the world. Kepler added:

“This [sphere], then, is the authentic; this is the most fitting image of the corporeal world, which anything that aspires to the highest perfection among corporeal created things takes on, either simply or in some respect. [The spherical is the archetype of light and likewise of the world] The bodies themselves were confined separately within the limits of their surfaces and could not by themselves have multiplied themselves into an orb. For this reason, they were endowed with various powers, which, though they do have their nests in the bodies, nevertheless, being somewhat freer than the bodies themselves and lacking corporeal matter (though they do consist of their own kind of matter which is subject to geometrical dimensions), may proceed forth and might try to achieve an orb, as appears chiefly in the magnet, but appears plainly in many other instances. What wonder, then, if that principle of all adornment in the world, which the divine Moses introduced immediately on the first day into barely created matter, as a sort of instrument of the Creator, for giving form and growth to everything [In praise of light] – if, I say, this principle, the most excellent thing in the whole corporeal world, the matrix of the animate faculties, and the chain linking the corporeal and spiritual world, has passed over into the same laws by which the world was to be furnished. The Sun is, accordingly, a particular body, in it is this faculty of communicating itself to all things, which we call light; to which on this account at least is due the middle place in the world, and the center, so that it might perpetually pour itself forth equably into the whole orb. All other things that have a share in light imitate the sun.” (Johannes Kepler, [*Optics: Paralipomena to Witelo and the Optical Part of Astronomy*](#), Translated by William H. Donahue, Green Lion Press, Santa Fe, New Mexico, 2000, p. 19)

According to the Kepler experiment, the daylight projection (as well as the direct sunlight projection) through a water filled sphere of positive curvature creates an amazing image inversion through an invisible hyperbolic conical surface of negative curvature, immediately located behind that sphere. The projection is such that the invisible daylight rays are concentrated onto an invisible conical focus, where the entire scene from the front of the sphere is reflected by inversion, in its totality, onto a plane surface at point ψ . (**Figure 12**) Two hundred pages later, Kepler described the process as follows:

“The true cause [of the image], however, is the succession of rays. For after intersecting with the axis and dispersing, those which had previously formed a limit at the exterior points α , β , γ , δ , always move into a position below the interior ones at ϵ , ζ , η , θ . If that cone of refracted and mutually intersecting rays were to stand whole in the air, It would then represent a figure generated from an arc one end of which is rotated circularly while the other remains fixed on high, the arc tending inwards. For the cone would be slender in the middle and quite acute. When the paper comes to the point of the cone ψ , *the illumination is the strongest, so much so that gunpowder in cold water is ignited when the sun is intensely hot.*” (Johannes Kepler, [Optics: Paralipomena to Witelo and the Optical Part of Astronomy](#), Translated by William H. Donahue, Green Lion Press, Santa Fe, New Mexico, 2000, p. 211)

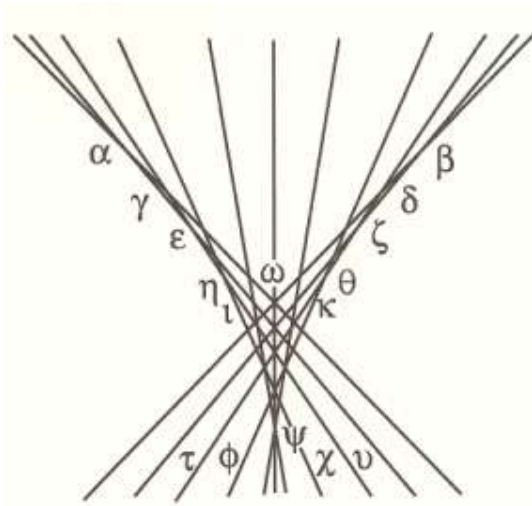


Figure 12 The working of daylight through the eye. How the daylight image is communicated through the retina of the eye by inversion and by going through the curved and the straight. All of the rays focused at point ψ , including the points τ , Φ , χ , ν , which are distributed to restore the linearity of the projected image upside down onto a single flat plane, as if the image had never gone through the spherical medium. Note how the back image (the back-door of my apartment) is an inversion of the original front projection. The yard fence is up and the sky is down.

You cannot know that this image exists unless you deliberately insert, perpendicular to the ground, a white sheet of paper behind the sphere at the precise location of ψ . And only then, will you see the entire scene in front of the sphere become illuminated in the back of it, as if under a future state of existence, entirely with straight lines and onto that flat plane. The curved image of the sphere is entirely reconstructed in reverse along straight lines as if it had never gone through the sphere. This process, known as human vision, replicates a form of transformation which is reflexive of the way the mind increases energy-flux density by going from the curved to the straight from the future.

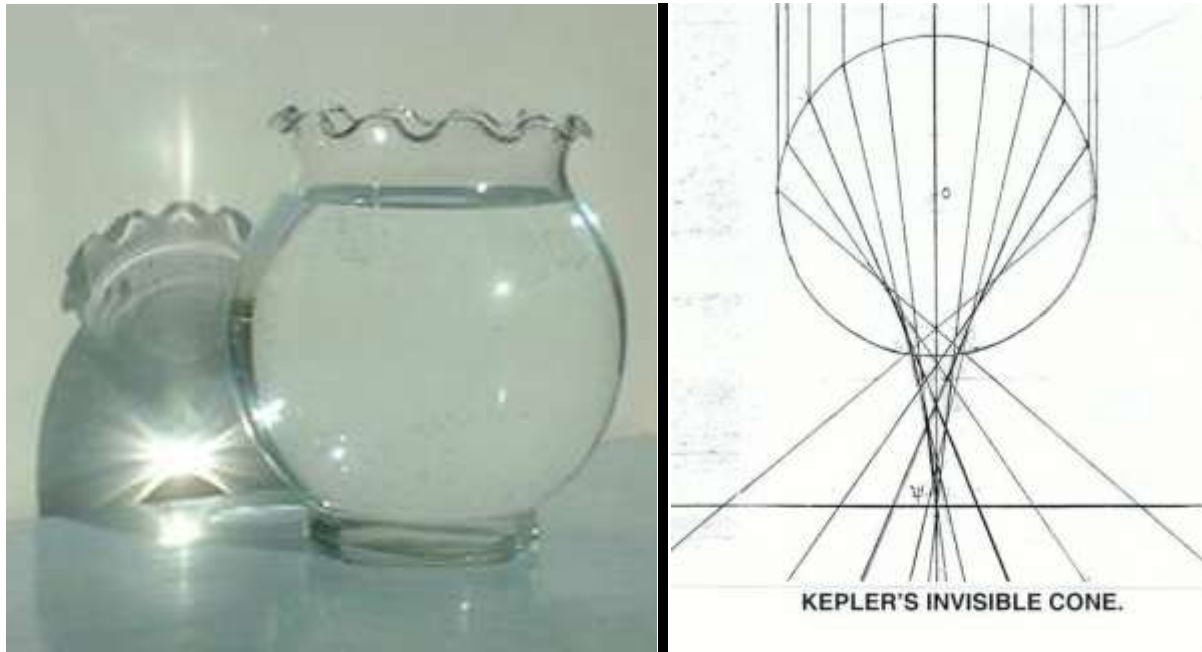


Figure 13 Kepler showed how the hot direct sunlight projects through cold water as the singularity of a caustic of inversion [a high density of non-linear singularities which Kepler admits having “despaired of defining geometrically the exact point at which this last intersection occurs.” (*Ibidem*, p. 205)] The last intersection of the caustic, as shown in Kepler’s invisible cone, at ψ , is the locus where the total image of the figure-ground inversion appears as a whole in the formation of a gestalt that shows how the future changes its past by construction. The same effect takes place, performatively, at the point of a new discovery of principle, as the impact of it gets reflected everywhere in the invariant cross-section of the mind of the discoverer, and thus, changes everything else in the mind’s past existence.

Imagine looking at a scene in front of you being entirely projected from the future through a water filled retina of your eyes onto the fovea points in the back of each of your eyes, without your eyes knowing that the image has gone through the transformation from the straight, the curved, and back to the straight again. Kepler described this invisible image processing in a manner that is quite explosive, because it actually causes a blast from the future. How else could you know something that is not yet there, and is waiting for you to grasp? As Lyn put it on the matter of time reversal:

“The ability to adduce a truly universal physical principle, must be prescribed, instead, as requiring the developed ability to present a current forecast of **what must be also a quality of that true foresight which goes intrinsically into a true sense of an actual future which actually exists only beyond the alleged “powers” of mere sense-perception, but, which, rather, exists only within the actual process of generating a future!**” (Lyndon LaRouche, [HOW THE FUTURE BUILDS ITS PAST](#), EIR, August 23, 2013, p. 6)

This type of inverse laser effect represents the same type of invariant inversion that takes place in a noetic axiomatic change. Thus, the concentration of the sunrays at point ψ has the effect of increasing the energy-flux density sufficiently to ignite a fire. This is the reason why you never want to look directly

at the Sun with your eyes. The experience may blind you for life. However, not only is your mind capable of doing it, but it is necessary for it to do it, if it wants to survive.

Here, however, there is a very special relationship between the one and the many. The whole is not different from the part because it is bigger, as the foolish Aristotle would have you believe, but because it is different from the part; in that it participates in all of the parts as being present in each of them as a totality. In other words, every part is like a monad reflection of the whole in its totality, somewhat similar to what Leonardo da Vinci used to demonstrate in his experiment of the *Camera Obscura*. There are an infinite number of such caustic images all around the sphere. Thus, the principle of the gestalt is such that the primacy of the whole over its parts is reflected in totality in each and all of them. Such is the participatory function of every true part of a whole like in a discovery of principle.



Kepler developed this irony within his opening *Author's Epigram* in his treatise on optics, where he used the equivalent of the gestalt figure-ground inversion moment of a double image formation as an expression of the incommensurable conflict between sense-perception and mind; that is, as Lyn would say, between the practical man and the creative thinker. If ever you wanted to see what the caustic spark of a discovery of principle looked like, this is it.

Figure 14 Gestalt of figure-ground inversion.

Eyes are pressing *Mind* to inform them about how light goes to where it should go in the experimental process of seeing; because the *Eyes* don't see the light go through them, they don't feel anything and they don't understand how and why they see things happen because they only experience the present fleeting moment. And, the reason is that *Eyes* are blind to the future; that is to say, as to the intention or purpose of light. So, *Eyes* cry out their distress:

**“Snatch us away from darkness; lead us to whatever light you will go to;
And from whatever fear of death you lack, deliver us also.”**

For sense-perception, the fear of death coincides with the fear of the future. However, sense-perception is not at fault, here, because it cannot understand what goes on with light, when it travels through the invisible cone of the *Eyes*. But, this is not the case for the fools who think that sense perception gives them something truthful in the form of sense-certainty. Their fault is simply that they don't understand that sense-perception is simply a recording device, the simple apprehension of a factum, which is merely a useful shadow for knowledge to judge and to evaluate, but is not knowledge itself. And this is the reason why *Eyes* are always in the shadow of darkness of Plato's Cave. But, somehow, Kepler educated his *Eyes* and gave them the ability to ask *Mind* for help, simply because they are, indeed, helpless without mind. And therefore, immortality can only be bestowed upon *Eyes*, if they collaborate with *Mind* in writing for the benefit of the future. So, *Mind* complied:

**“As far as possible, I shall do it; only let fame favor the speaker;
I shall make you mortals eternal with my writings.”**

Thus, *Mind* is not dependent on *Eyes*, but, rather, *Eyes* are dependent on *Mind*. And *Mind* does not rely on what sense-perception apprehends, but relies on the process of change between *Eyes* and *Mind*. As the polygon is to the circle, so is the curvature of the relationship between *Eyes* and *Mind*. Like Cusa stated in *De Docta Ignorantia*:

“Whatever is not truth cannot measure truth precisely. (By comparison, a non-circle [cannot measure] a circle, whose being is something indivisible.) Hence, the intellect, which is not truth, never comprehends truth so precisely that truth cannot be comprehended infinitely more precisely. For the intellect is to truth as [an inscribed] polygon is to [the inscribing] circle. The more angles the inscribed polygon has the more similar it is to the circle. However, even if the number of its angles is increased *ad infinitum*, the polygon never becomes equal [to the circle] unless it is resolved into an identity with the circle.” (Nicholas of Cusa, [*De Docta Ignorantia*](#), translated by Jasper Hopkins, The Arthur J. Banning Press, Minneapolis, Minnesota, 1985. p. 8)

So, the most important problem of epistemology is to be found in the relationship between the curved and the straight; because this is the simplest form of axiomatic transformation between two domains which are fundamentally incommensurable. And, the way that life deals with such a question, for instance, is through mass deaths of living species that have reached an impassable barrier and cannot move beyond it without going through an axiomatic change. But, man does not suffer that cursed intention when he acts through the Promethean intention of fire in relationship to water. Thus, the passing of fire through cold water is an appropriate idea, here, as if you were going through some process of cold fusion toward a progressive immortality.

However, the significance of such a non-linear jump from the future, as reflected in the increase in energy-flux density per unit of matterofmind still to come, happens only when the present is prescient of the time reversal function that progress is based on; and that is, when a true personal and performative measure of change acts on the universe by walking backward, as if from inside the future to change the past. It is not a time which is directed toward the future from the past, but a time that comes back from the future at you to change the past, as if you were walking ahead backwards.

As outrageous as this may sound, don't allow dead heads to stop you from figuring out that when you provoke an axiomatic change in someone else, your life is changed by the effect that you will have produced for the benefit of others: that is the boomerang effect of the future which will come back at you as either a threat or a great benefit. You won't know which one it is going to be, until you risk it. So, stay ahead of yourself and keep looking back from the future, because the moment just before “now” is always something that actually came from right after it; and when you realize that, ahead of time, then, you are able to catch yourself and ward off any threats to your progress.



Figure 15 Three stages of axiomatic change within living species on Earth; and then, man is born as the fire-bringer, with an irony that is intended to be recognized at some future time. This is the sort of epistemological certainty that must replace the evil of sense certainty by time reversal. As Lyn stated: “Study suggests that the sequences of life known as ‘on Earth,’ have had an ordering, and that some specific evolutionary sequences have entered ‘dead ends.’ The higher end of those sequences, as far as we might know this presently, appears as a kind of leap, a leap which appears to have occurred during some relatively recent time past, as if, for example, on Earth a million or so years ago: a leap which had occurred with the emergence of a unique species, one which is identifiable as ‘the fire-bringer,’ which is otherwise named mankind.” (Lyndon LaRouche, [‘WHAT IS LIFE?’ AT THE BRINK OF MARS](#), EIR, August 9, 2013, p. 37)

Right now, it appears that such a time reversal function were still an experience to come for most people, and most of them might even hate you for reminding them of their delayed station or absent-mindedness, about experimenting the future in this way. However, keep persisting because, even though people might hate you for having reached out into something they don’t yet have access to, they will fear you, because they will know you have reached into something more powerful from the future than what they have been dragging behind themselves from the past. That foreknowledge should be enough to keep you going, provided you think like Rabelais when he said: *“Fate leads the willing, but the unwilling drags.”*

So, as Lyn indicated in what he named “the future past,” the experience of time reversal is crucial because it is the only way to change the past; that is to say, the only way to make the difference between the point of fact and the point of change. If you live your life by the point of change, you are always living from the future, by the future, and for the future.

As Shelley noted, in his *Defense of Poetry*, this time reversal principle of discovery is capable of being perceived by most people at certain critical moments of history, because this form of “future past” is precisely what predetermines how mankind is capable of acting presently on the future by receiving,

assimilating, and communicating “intense and impassioned conceptions respecting man and nature.” The reason this happens is that, in these moments, human will-power becomes fully mobilized to turn the mind around and break the shackles of the past, thus, enabling itself to jump ahead of time and pull civilization forward from the next step of progress. Again, the point to understand is that such an event is not initiated from me, by me, and for me; it is generated from the future, by the future, and for the future. In fact, that is the ultimate appeal of sense perception that the *Eyes* are calling on *Mind* to help them make in order to participate in immortality, as per Kepler’s **Epigrams**.

CONCLUSION

EPIGRAM.

*“The eye speaks: ‘I devalue life in exchange for fame; for a name, perception:
Teach, O soul, how to die more fruitfully, so as to not die.’ ”*

Johannes Kepler

So, how do you solve the problem of the pervasiveness of sense-perception in society today? Just don’t let anyone piss on your fire. Jump into the future now, and throw your fire in their water. Think of it this way: who would have guessed that some of the most important things to inquire about and to learn from in the universe would be almost next to nothing like a melting snowflake? The reader should not react negatively to this seemingly outrageous conclusion, because if someone should ask you why I recommended him to read this little paper of Kepler *On the Snowflake*, just tell him that the reason is because the intention for giving so much importance to something as insignificant as that, is because God actually created it for your enjoyment and for no other reason. And, that was Kepler’s conclusion. As Lyn keeps repeating all the time: “Have fun!” And, reasonable fun is something beautiful, truthful, and complete in itself, no matter how small or insignificant it may appear to be to your sense-perception.

Thus, the relationship between light and water has been created as the playground of the future in the modern form of **FUSION POWER** and **NAWAPA XXI**. That is the next playground for mankind. Like Kepler said: “Now, as God the Creator has played, he has also taught nature, his image, to play; and the game is just the same as the one He had played for her.” (Quoted from Johannes Kepler, [*Optics: Paralipomena to Witelo and the Optical Part of Astronomy*](#), p. 19)

That is why nothing further needs to be added to the significance of some playfulness which might pass through your mind from the curved to the straight.

FIN