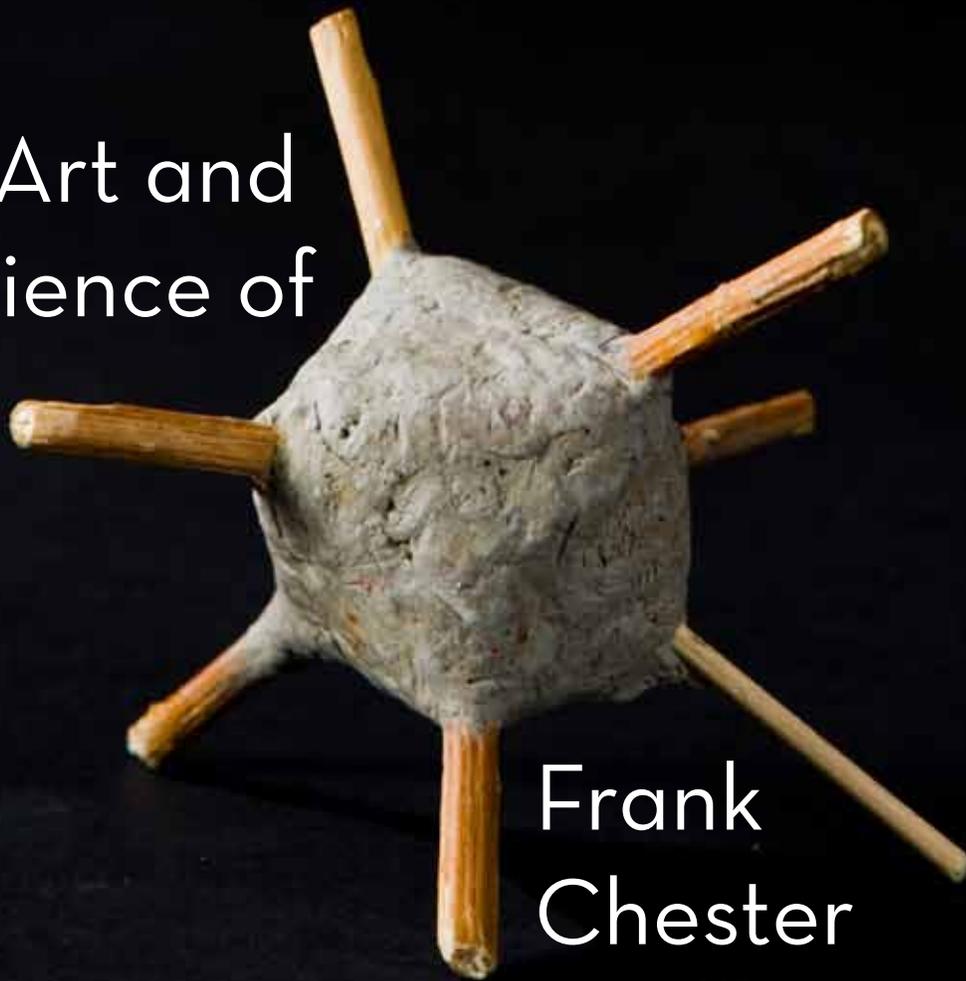


SEVEN STICKS IN MUD

The Art and
Science of

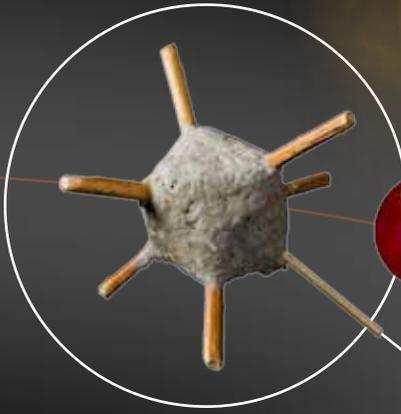


Frank
Chester

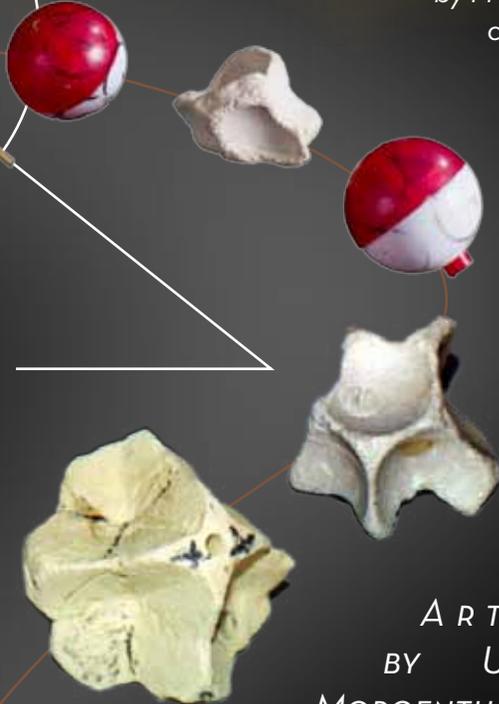
BY SETH T. MILLER

THE

CHESTAHEDRON

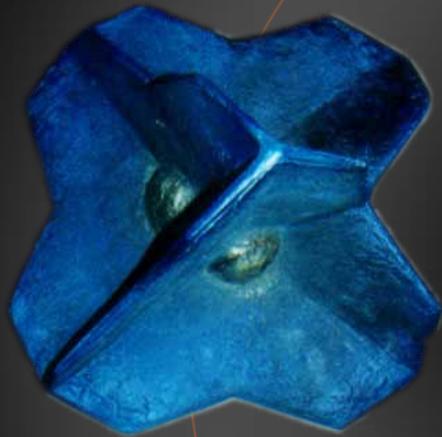


It started with seven sticks in the mud...



The Chestahedron is a new geometric form discovered by Frank Chester. It has seven faces of equal area, is comprised of four equilateral triangles and three quadrilaterals, and has a surprising amount of unique geometric properties. Frank's research has revealed a number of promising potential areas of application of this form, from architecture, vortexial mixing, beehive construction, bell-making, and the interior structure of the Earth, to the inner geometry of the human heart, not to mention its purely aesthetic applications.

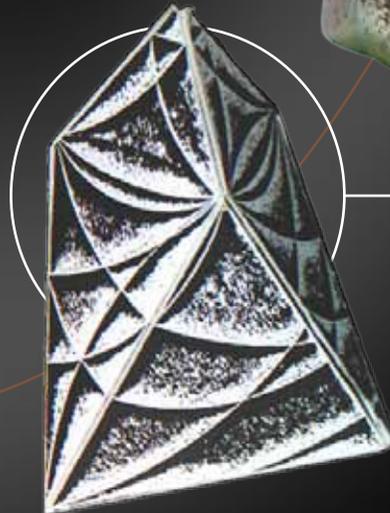
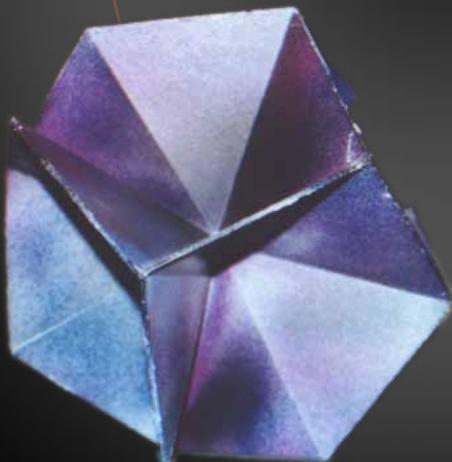
ARTICLE*
BY ULRICH
MORGENTHALER,
TRANSLATED BY DR.
KARL MARET



Occasionally one is blessed with the good luck to be allowed to meet a phenomenal human being: The kind of person who has followed his individual



The Chestahedron



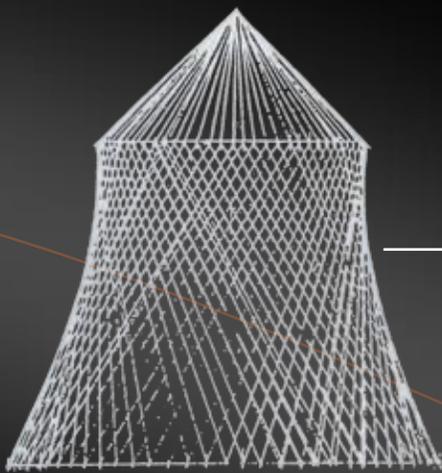
path to discover mysteries of our world, and who then continues, without distraction, to follow his path in order to bring one treasure after another into the light and life. Such human beings

* THIS ARTICLE FIRST APPEARED IN DAS GOETHEANUM NO. 20-10

inspire and vitalize, solely through their presence and their inner dynamic, and leave one somewhat speechless and in awe. Among such humans, I count Frank Chester. His life theme arose from a study of the so-called platonic solids that have the fundamental property of being constructed only from identical equal-sided polygons.

THE DISCOVERY OF THE CHESTAHEDRON

A European journey in the 1990's led Frank Chester, the San Francisco retired teacher, sculptor and geometer, to Dornach in Switzerland. Prior to this journey he had never heard anything about Rudolf Steiner or Anthroposophy. He was immediately impressed by Steiner's two-dimensional, seven-sided planetary seals, and equally by his seven-sided capitals on top of the columns within the model of the first Goetheanum. While gazing upon these forms a question arose in him: Could a three-dimensional, seven-sided form exist that might also demonstrate the harmonic nature of a platonic solid?



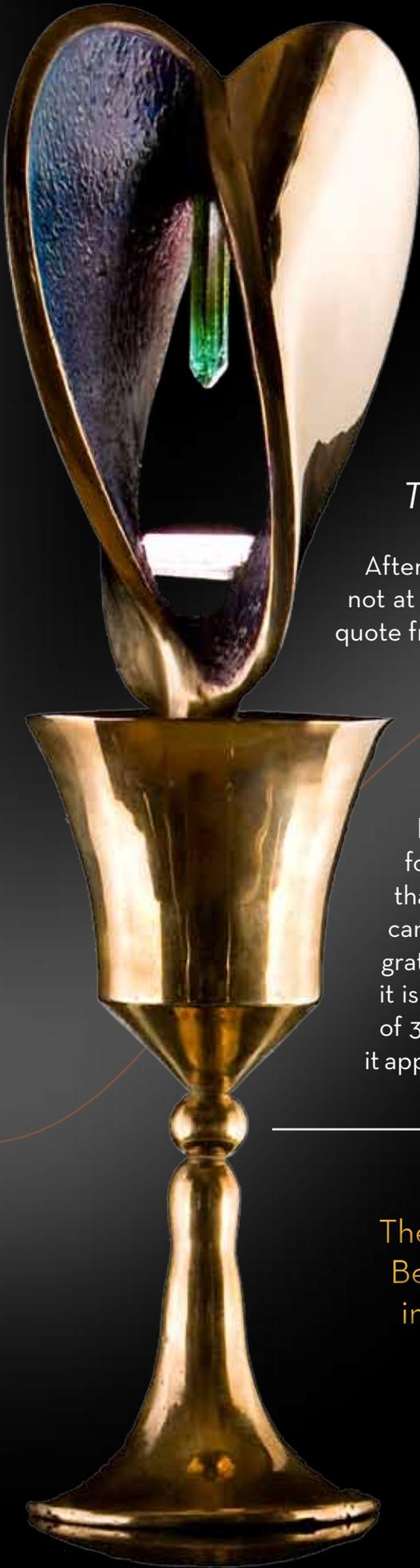
Not being satisfied with existing seven-sided models, Frank Chester began to experiment: with clay, string, straws, wire, paper, soap bubbles, and all manner of forms. After many failures he discovered, in the year 2000, while artistically playing, an entirely new, never-before seen geometric figure that was simpler and more elegant than anything seen before. He called his discovery the "Chestahedron" (Chestaeder in German).



The Venus form, an inversion of the Chestahedron traced through time.



This special bell-shape is made by spinning the Chestahedron.



This solid has seven surfaces with exactly the same surface area. It consists of four equilateral triangles and three additional, four-sided surfaces which resemble kites. It shares the same property with the five regular platonic solids in that each of the seven surfaces has the same area. It is unique in that it contains two different shapes and two different side lengths while in the five platonic solids these are always the same. Interestingly, Chester could utilize two circles in the ratio of the golden section (Phi) to lawfully and reproducibly develop the surfaces of his form.

THE HEART AS AN ORGAN OF FLOW

After he had discovered this new form, Frank Chester was not at all clear what its importance would be for the world. A quote from Rudolf Steiner guided him: 'Geometry is knowledge that appears to be produced by human beings, yet whose meaning is totally independent of them.' Chester continued to experiment for ten years more. Among the most important findings that he has discovered to date is the following: After he had seen that his seven-sided form can be harmonically integrated into a cube when it is oriented at an angle of 36 degrees, and that it appears to resemble a

The Venus and Bell together in a chalice.





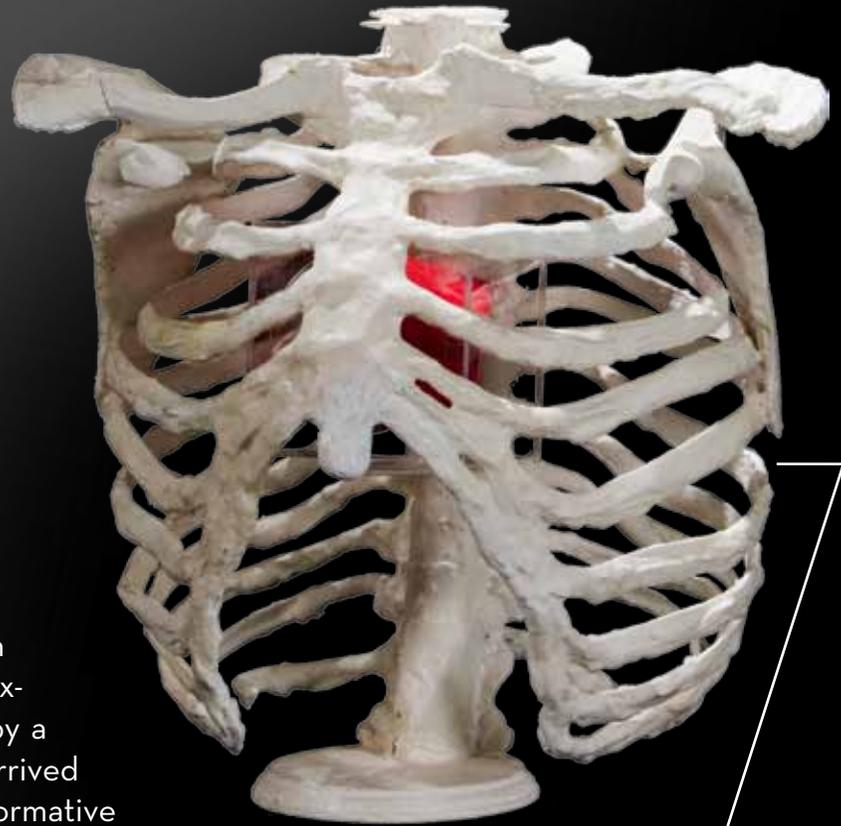
kind of heart shape when he dipped the wire frame model into a soapy liquid and created convex surfaces by expanding the enclosed soap bubble gently with a straw, he had an idea: He took a solid model of the expanded, seven-sided form and dipped it along its axis into a water-filled vortex chamber. When he spun it vertically, the resulting water vortex was stable. However, when he spun the form attached to a high-speed drill and introduced it into the water at an angle of 36 degrees, a type of pocket-shaped vortex developed on the side of the main water vortex.

Through what he saw developing within the water, Frank Chester developed a sculpted model and then opened it in cross-section. This result reminded him immediately of an image of a vertical cross-section through the human heart. Driven by curiosity, his joyous experimental nature, and further inspired by a drawing from Rudolf Steiner, he finally arrived at a three-dimensional depiction of the formative forces which underlie the human heart and create its

asymmetric form through its muscular

layers. His conclusion: the formative forces which form our heart muscle are active as vortices and are oriented and maintained through the seven-sided form discovered by him.

Since Frank Chester developed this insight, the heart is no longer a pump. For him, it has instead become an organ of flow (regulation). If the heart were a pump, the paper-thin tissue at the apex of the left ventricle could never



The geometry of the Chestahedron shows why the heart is positioned at a particular angle in the chest.



withstand the developing pressure. However, from the perspective of a vortex model of the heart, it becomes understandable why this part of the heart is never exposed to these higher pressure dynamics.

In the developing human embryo, blood is already streaming rhythmically through its blood vessels



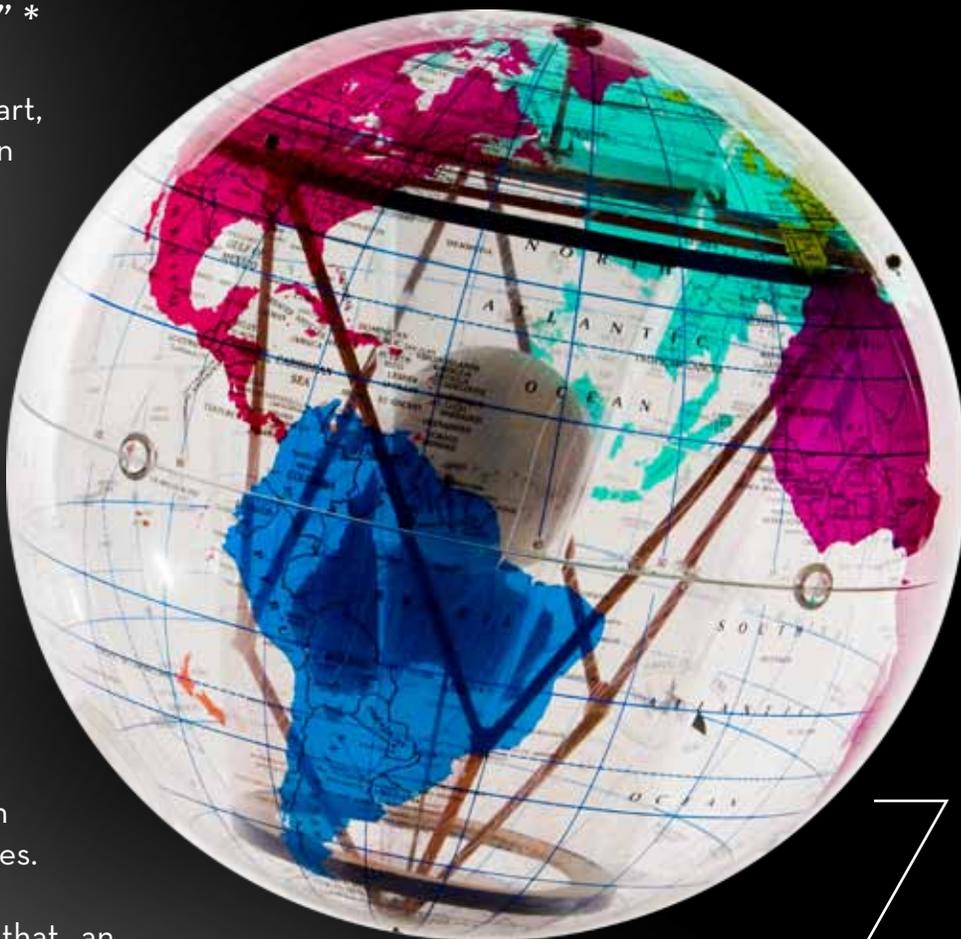
before the heart has even formed. Something other than the heart, therefore, must be responsible for this movement of the blood. The heart that develops later appears to function more like a balancing brake: blood streams into the left ventricle in a clockwise direction and then vortexes around itself, finally emerging from the left ventricle in the opposite, counter-clockwise direction. At the moment when the blood flow reverses, there is no movement; absolute stillness reigns. However, this is a dynamic rest. This is the exact moment, simultaneous in time and space, that for Frank Chester represents the eternally present heart-centered state in each human being.*

Frank has created many architectural designs using the Chestahedron.

“A KIND OF TETRAHEDRON” *

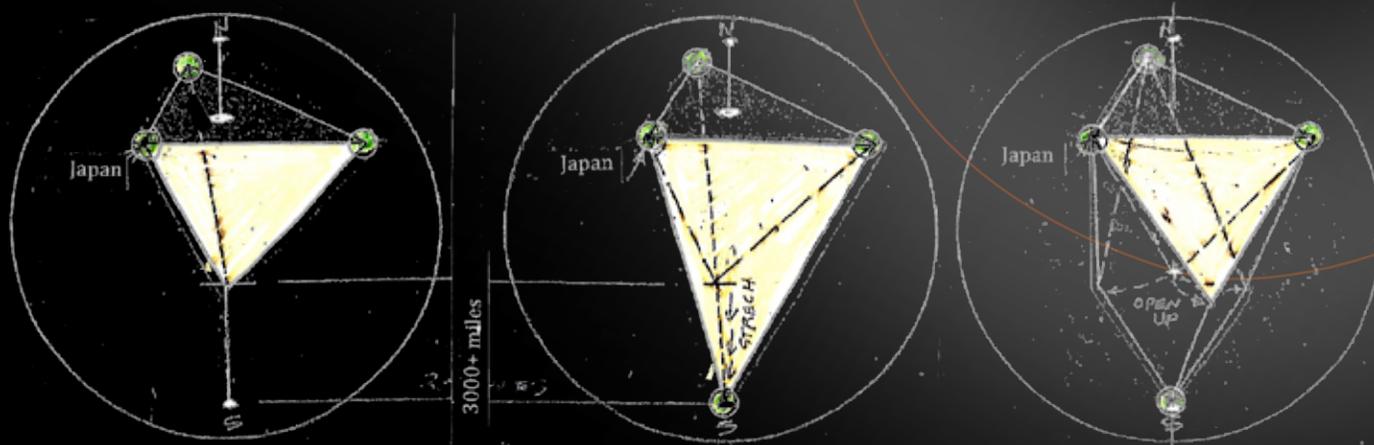
After addressing the human heart, Chester then turned his attention to the earth. A further statement from Rudolf Steiner gave the impulse: In a lecture about the causes of earthly volcanism, Steiner indicated that on the basis of his spiritual scientific researches, the earth in its foundational form was not a sphere but rather had at its basis a “kind of tetrahedron”: In Middle America, at the south pole, in the Caucasus (mountains) and in Japan, are the four corners of the tetrahedron, a form that was created out of the cosmos through the joining together of four triangles.

Chester’s calculations showed that an equilateral triangle would be created if one joined points together in Japan, the Caucasus, and a third point in Kansas, North America, rather than the point in Middle America mentioned by Steiner. An inverted tetrahedron constructed downward from this triangle would be short of reaching of the South Pole (inside the earth) by 4,132 kilometers. In order to reach the South Pole from this tetrahedron, one would have to equally stretch its three south-pointing faces. However, with this construc-

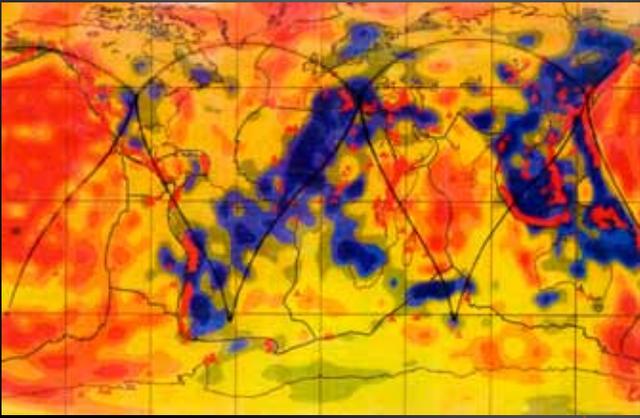


The Chestahedron
in the Earth.

TETRAHEDRON, SOMETHING OF A TETRAHEDRON AND THE CHESTAHEDRON IN THE SPHERE OF THE EARTH



* ARTICLE BY TOM RAINES, FIRST PUBLISHED IN THE SPRING 2010 ISSUE OF NEW VIEW

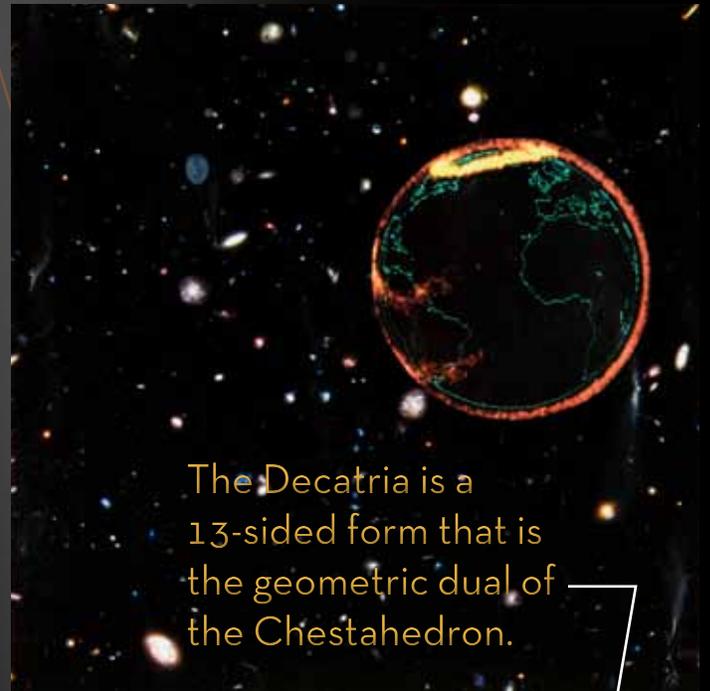


Warm and cool zones in the Earth may correspond to the form of the Chestahedron.

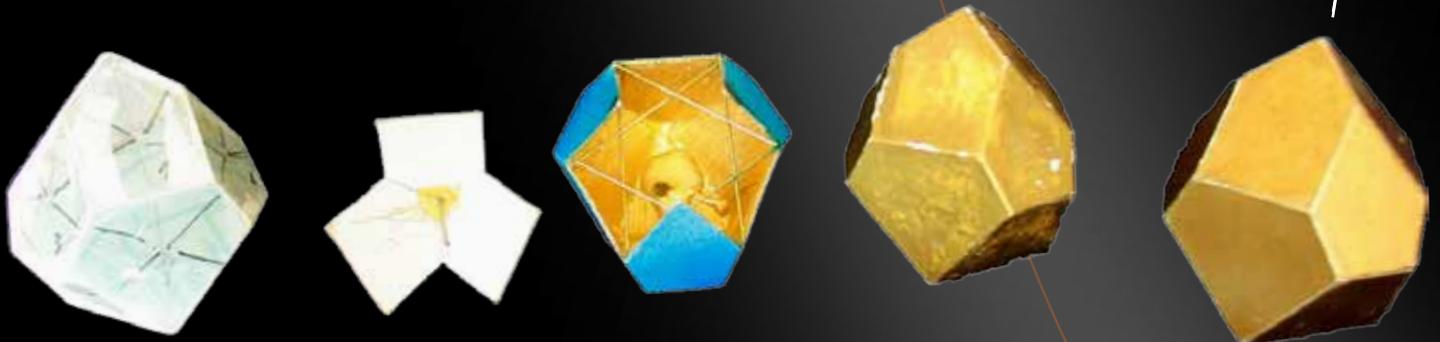
tion, one no longer has an “exact” tetrahedron, but rather a “kind of tetrahedron.” According to Frank Chester, one can open the downward-pointing sides of the tetrahedron (hinged to the base triangle) at an angle of 94.8304 degrees. At this point the three triangles stand in the exact relationship to one another as the four equilateral triangles in the Chestahedron. An inverted Chestahedron constructed on the above triangle, formed by Japan-Caucasus-Kansas, touches the South Pole exactly with its lower apex point. Perhaps it was the Chestahedron that Rudolf Steiner saw clairvoyantly as the basic form on which our earth is based and had tried to suggest in his lecture? Because a Chestahedron could also be described as a “kind of tetrahedron.”

UNDERSTANDING EARTHLY PHENOMENA

Subsequently Frank Chester found phenomena which appeared to confirm his suggestion that the Chestahedron acts as a fundamental geometric form within our earth. If one follows a lawful transformation involving surface-point-surface mapping, it can be shown that the Chestahedron has a cube as its foundation (ed.: within it). With reference to the dimensions of the earth, this cube has the same diameter as our moon (the earth’s core has a diameter of 3400 km; the diameter of the moon is 3474 km). In 2008, scientists at Uppsala University in Sweden published findings that appeared to confirm that the core of the earth is a cube (Translator note: Specifically, the round earth’s core has a cubical iron crystalline structure and not a hexagonal one as assumed in older models).



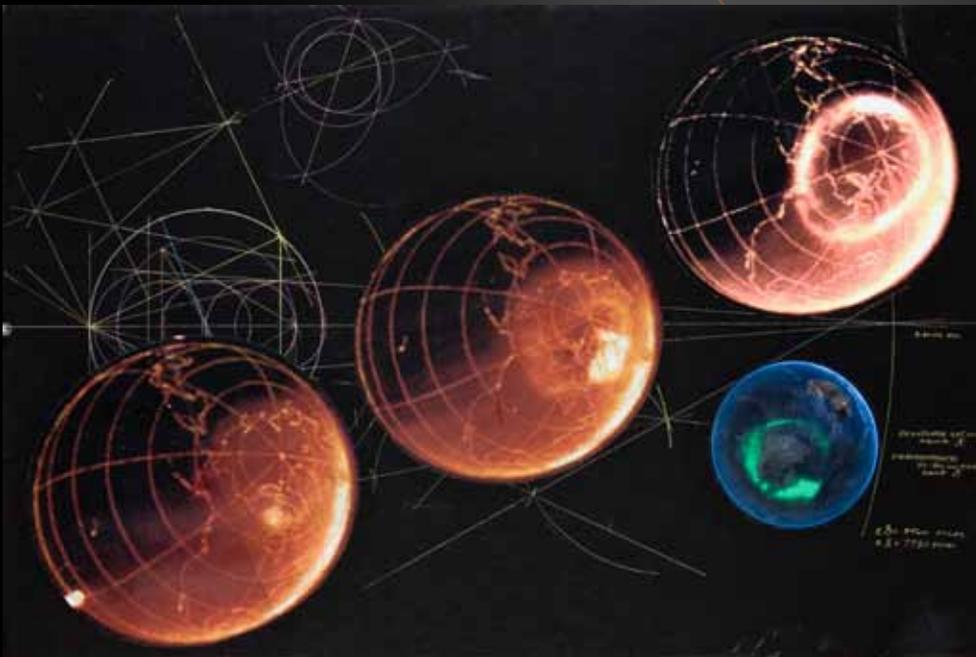
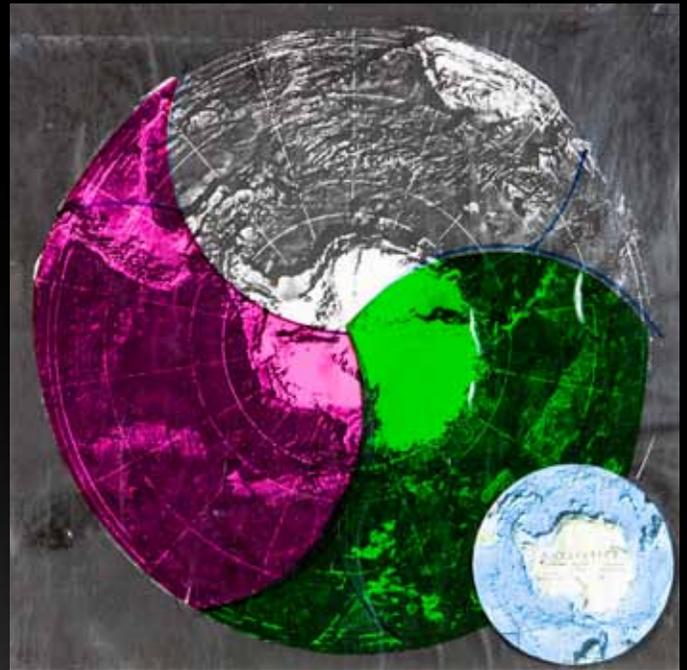
The Decatria is a 13-sided form that is the geometric dual of the Chestahedron.



HOT AND COLD WORLD

These findings, which are aligned with the idea of a Chestahedron in the earth, offer an explanation why seismic waves travel (through the core) faster along the Earth's axis (from pole to pole) in comparison to their movement from equator to equator. It can also be shown that notable synchronic lines that join regions of cooler, warmer, and hotter earthly zones in seismic maps correspond essentially to the suggested Chestahedron model within the Earth.

Perhaps the most impressive application of this work may be an explanation for the underlying phenomenology in the appearance of the northern lights: The distribution in the appearance of both the northern lights (aurora borealis) and the southern lights (aurora australis) (on the earth's surface seen from space) appear to be in alignment with the rings that Frank Chester found in his experiments with the Chestahedron creating water vortices while studying the energetic origin of the human heart. Using the Chestahedron, Chester found a common denominator, a starting point which promises to offer a deeper understanding of both earthly phenomena as well as those of the human heart.



The Chestahedron may be related to the form of the auroras.

Questions upon questions now arise in me, but simultaneously wonder and awe-filled inwardness are present: Could it be that not only geometrical forms lie at the basis of the human heart or the earth, but specifically the same geometrical structure appears to be the basis of both, namely the seven-sided Chestahedron discovered by Frank Chester? And further: If the heart is "the center of the human being" and the heart and Earth stand in such an inward relationship to each other through the Chestahedron, what then is the Earth? How can such questions bear further fruit and insights? *

* END OF TOM RAINES' ARTICLE

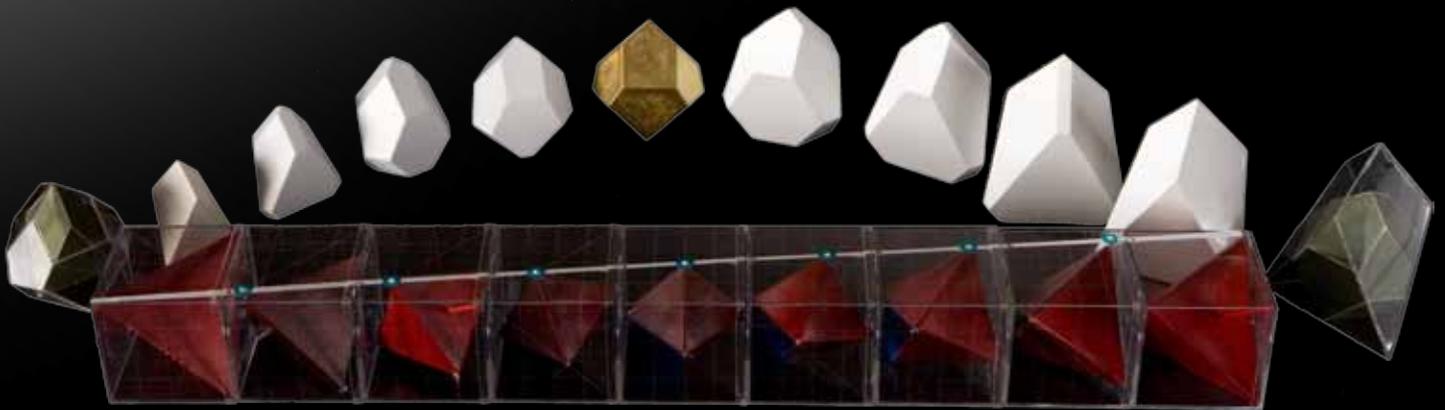
Frank Chester has invented a device, designed upon the geometry of the Chestahedron, called the Chesta Vortex Organizer (CVO). The CVO is meant to be utilized in biodynamic preparations, stirring, mixing, aeration and bio-augmentation. The device has two moving forms turning in opposite directions, 90 degrees from each other.



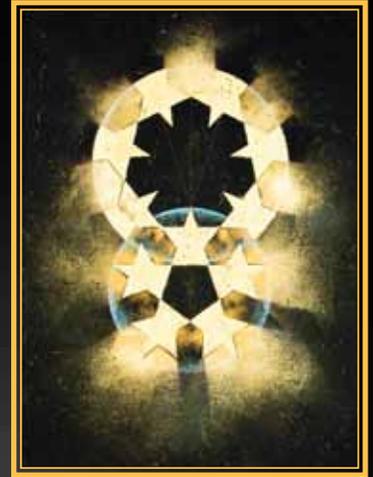
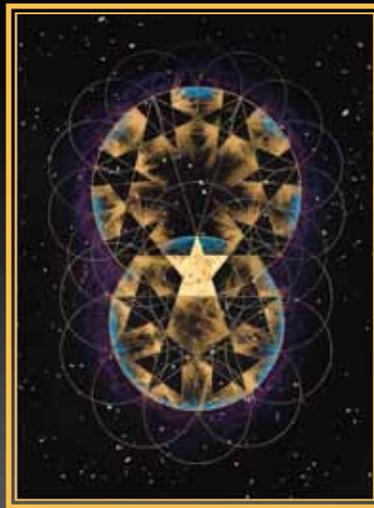
Frank has been given the opportunity to test the new device at Environment Ventures Marketing, Inc. in the Philippines. He has been invited to a professional laboratory environment which includes scientists, engineers, fabricators, and machines to produce and test many of his ideas.



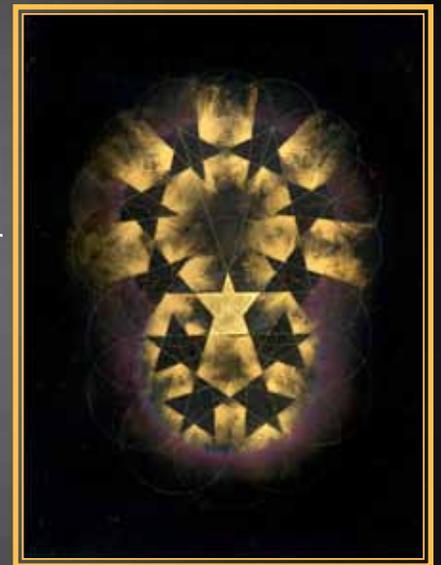
The dualization of the Chestahedron into the Decatria, and the Decatria into the Chestahedron.



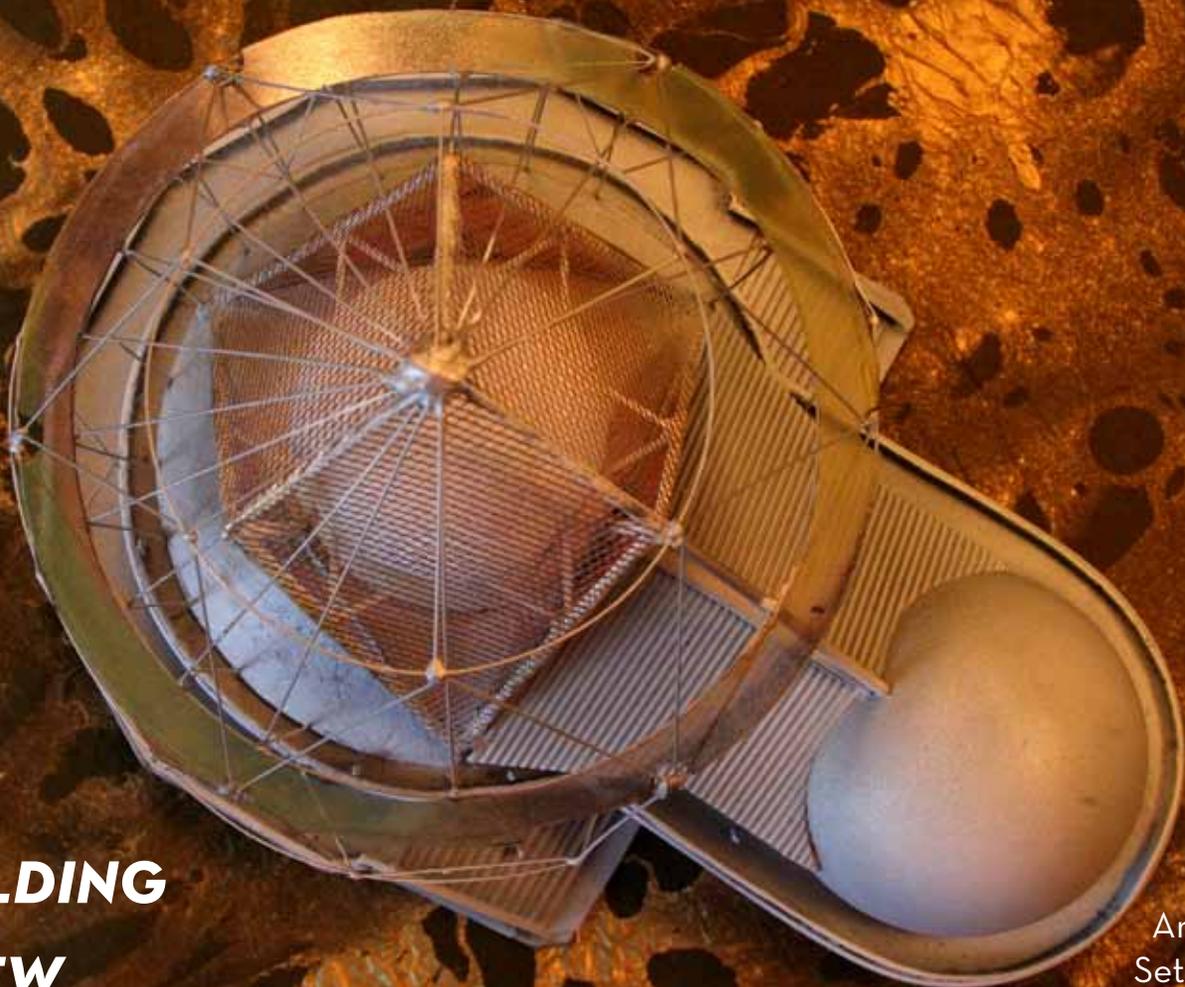
One way that the Chestahedron can be formed is by rotating a tetrahedron within a cube.



The sale of paintings, sculptures, and jewelry supports the ongoing development and application of Frank's work.

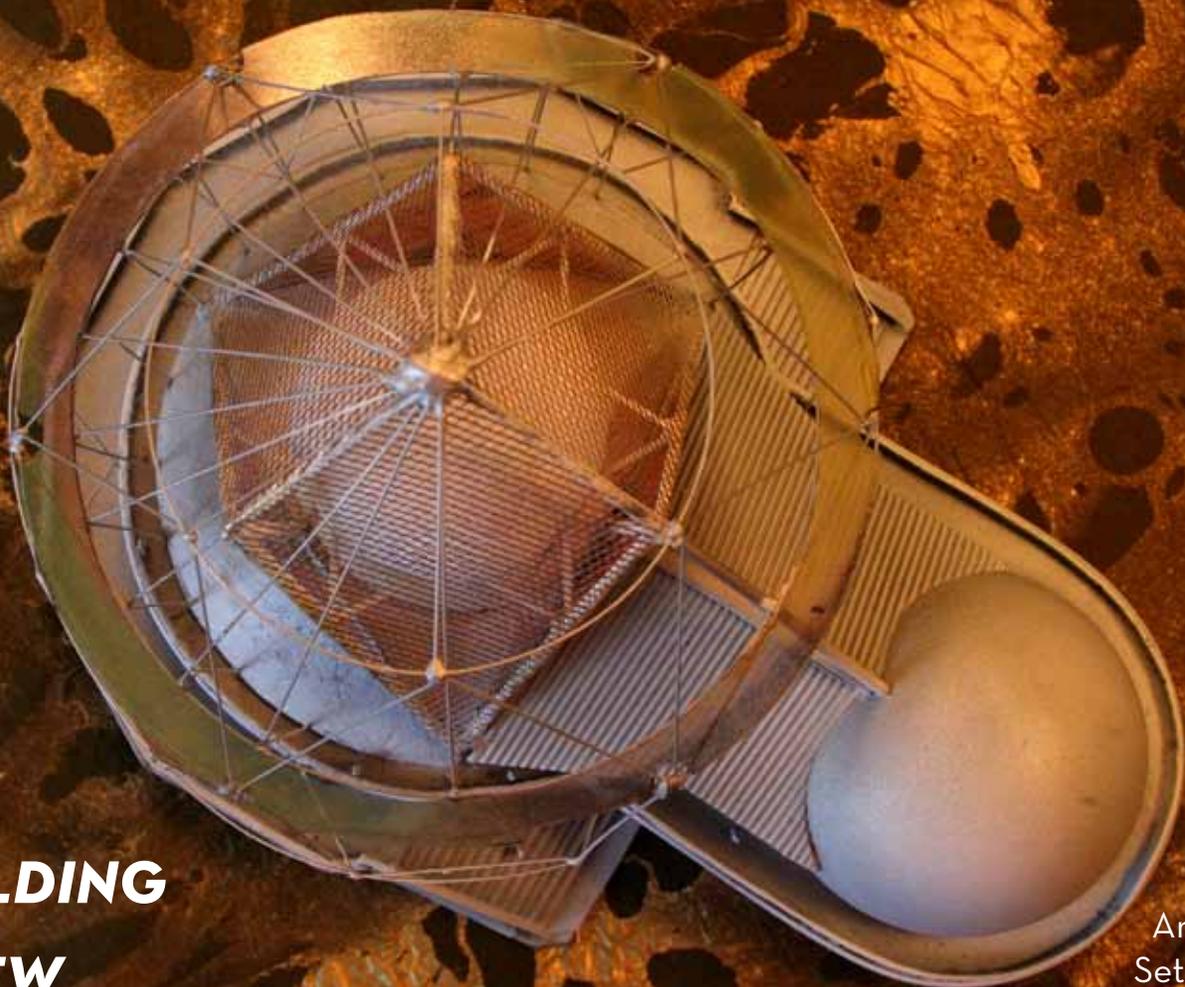


Frank has invented a unique bell mounting assembly and ringer, which suspends the bell from a point rather than from above, allowing it to resonate with its purest tones.

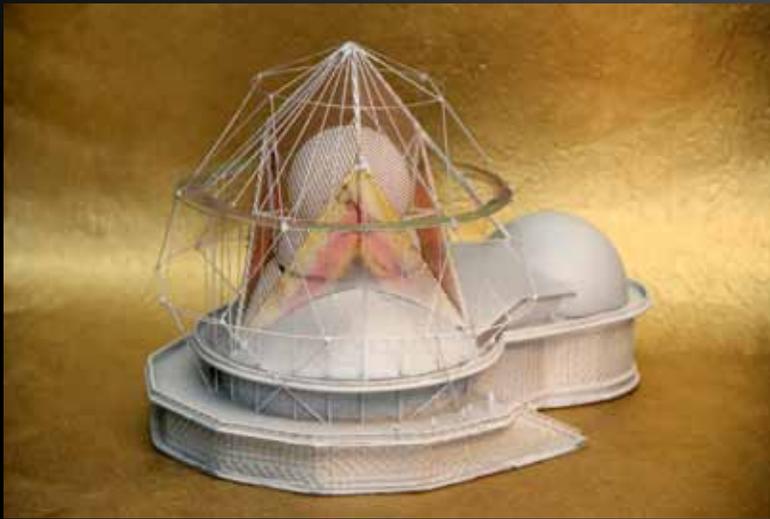


**BUILDING
A NEW
MYSTERY
CENTER**

Article by
Seth Miller



Frank was invited to come to Dornach, Switzerland to display his sculptural works, at a time that marked the 100th anniversary of Rudolf Steiner's architectural impulse. The presentation took place in the building that forms the heart of anthroposophical studies in Europe, the Goetheanum. Frank, deeply inspired by the architectural designs of the first and second Goetheanum buildings, created a model for a new building meant to support anthroposophical and related work outside of Europe.



Frank was inspired directly by both buildings, and has taken up the impulse to further the architectural reflection of the continued evolution of anthroposophy in his own design, which is a further metamorphosis of the designs and principles Steiner used in the first and second Goetheanums. The design is centered around the unique geometry of the seven-sided form that he discovered. This form, the Chestahedron, derives its name from its connection to the heart: it is a proposed geometrical template for the form of the human heart. The Chestahedron therefore embodies the principles behind the development of the kind of heart-thinking that is

so important for our time. The building is meant to carry forward the necessary outer manifestation of the changing nature of anthroposophy itself, and would provide an appropriate space for lectures, workshops, mystery plays, musicals, eurythmy, visual arts, and meditation. The space will support public outreach and provide a powerful physical representation of the life-giving nature of anthroposophical activities in the world.

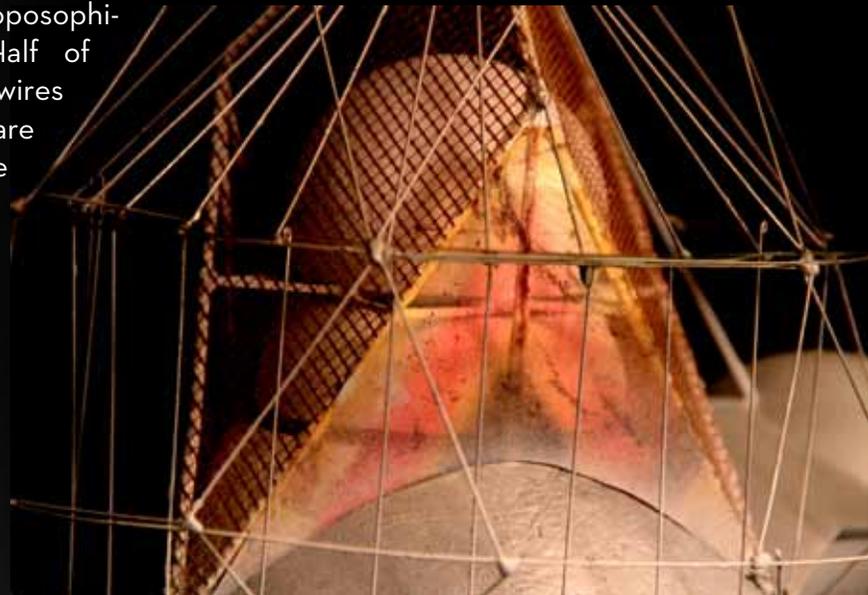
BUILDING FEATURES

The geometry of the structure is based on the form of the human heart. Two cupolas meet in the main part of the building, in a way reminiscent of Steiner's ground-breaking design for the first Goetheanum. However, in this case the cupolas interpenetrate vertically and are suspended by the Chestahedron above. The upper cupola is based on a geometry of the number 5, while the lower cupola is based on the number 7. Together they meet in a plane that forms a perfect six-sided hexagon.

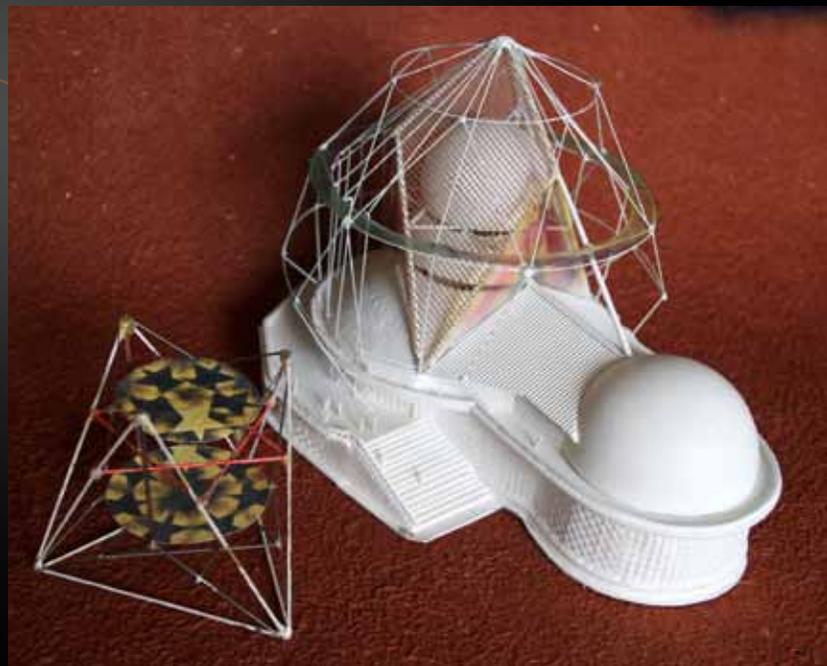
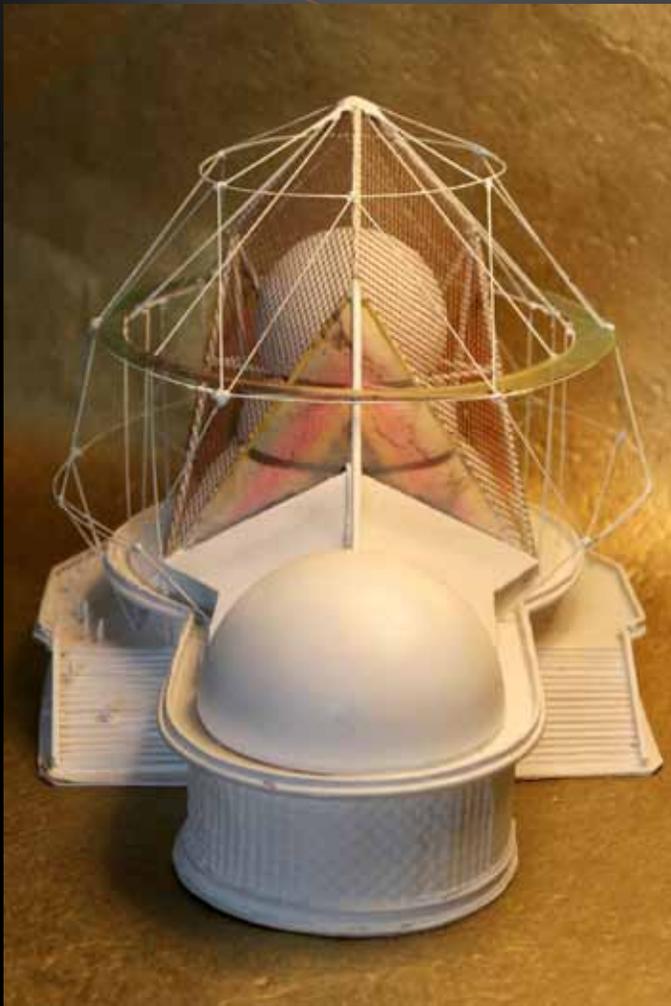
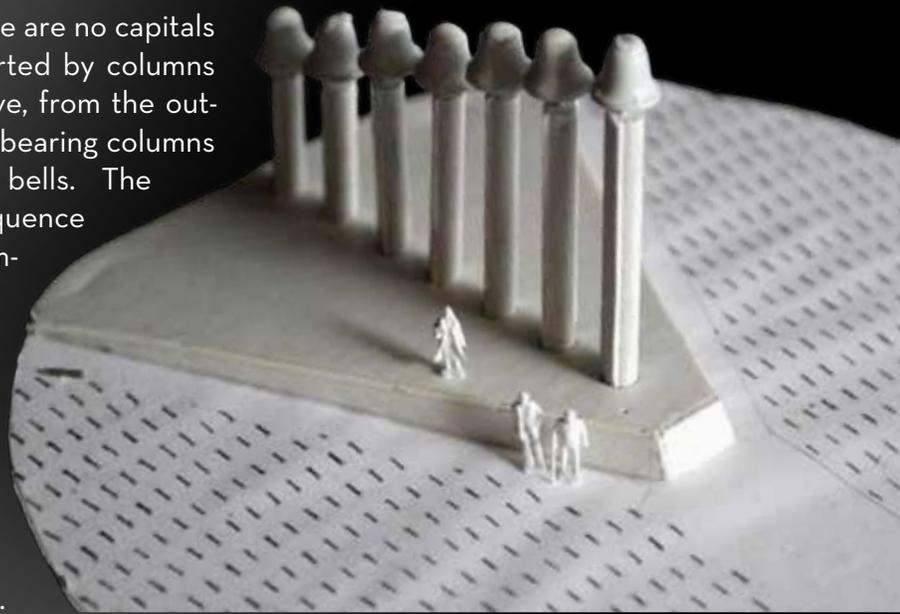


While the main dome(s) are suspended from and sit inside the Chestahedron, the Chestahedron itself is embedded in its dual form, the decatria (dek-a-TRIA: a form with 13 faces). The Chestahedron and decatria together embody the principle of reversal, and the principle of levels of self-embeddedness and self-unfolding that are key recurring patterns in anthroposophical work. Half of the supporting wires

from the decatria are structural, while the other half are made of a thick nylon that will allow the strings to literally be played as a musical instrument with an appropriate bow. The building itself thus embodies a musical principle as a part of its very structure, and will "sing" its geometry gently with the blowing of the wind, which will make the strings resonate at their fundamental frequency.



Unlike the capitals in the first Goetheanum, there are no capitals inside the building; the structure is not supported by columns from below, but is rather suspended from above, from the outside. This allows for seven internal, non-weight-bearing columns which are capped by seven individually made bells. The seven bells are based on the transformative sequence of Steiner's seven planetary seals and the geometry of the Chestahedron, and increase in size by a factor of $1/7^{\text{th}}$. Where the capitals in the first Goetheanum formed a transformative sequence of sculptural form, the bells form a transformative sequence of audible tone. The sequence of tones yields a transformation at a higher octave, and can fill the space in a way that can be shared directly and inwardly that is not possible with purely visual forms.



Rather than force the skin of the building to hold only one color, it will instead be coated with a surface that will reflect the color projected onto it by a series of surrounding tourmaline-shaped panels of colored glass. The color of the building will be organically formed out of the seasons and daily weather conditions, and reflects an integration of the natural and spiritual environments as they change throughout the year.



THE CHESTAHEDRON AS AN ARCHETYPE OF FORM

Article by Seth Miller

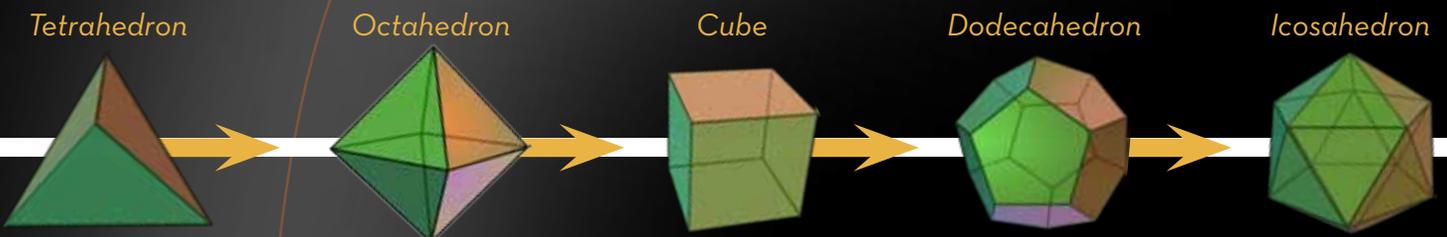
A Platonic solid is a regular, convex polyhedron. This means that it is created by repeating a single shape, like a triangle or pentagon, so that it completely encloses a volume. There are only five Platonic solids: the tetrahedron (4 faces), cube (6 faces), octahedron (8 faces), dodecahedron (12 faces) and icosahedron (20 faces). Each Platonic solid can be transformed into another Platonic solid by pushing its points into planes (truncating them).

POLYHEDRON						
NAME	FACES	POINTS	EDGES	TOTAL	POLY/CON	AREA
OCTAHEDRON	8	6	12	28	△	1.0
CHESTAHEDRON	7	7	12	28	△□	1.0
HEXAHEDRON	6	8	12	28	□	1.0

The cube and octahedron are duals of each other in this way, as are the dodecahedron and icosahedron. The tetrahedron is its own dual. The Chestahedron is similar to the Platonic solids because its faces all have an equal area. It is different in that there are two types of faces, an equilateral triangle and a kite shape (a quadrilateral).

Frank has discovered that the Chestahedron relates directly and exactly to each of the Platonic solids. He has also realized some unique properties of the Chestahedron that require us to think differently about the nature of the Platonic solids in general and how they are formed. He has discovered that the Platonic forms can be created through a phenomenologically based serial transformation beginning with the tetrahedron, rather than requiring them to be paired only with their duals. The serial transformation occurs through the principle of truncation (contractions) as follows:

A tetrahedron's points are truncated (technically this is known as rectifying the tetrahedron). This yields the octahedron (as a transitional form halfway between the tetrahedron and its dual, which is itself). When the octahedron's points are truncated, its dual, the cube, arises. Truncation of the cube only yields the octahedron again, but Frank has found that the cube can transform into the dodecahedron if, instead of pushing points into planes, the *lines* of the cube are pushed into planes. Finally the dodecahedron's points are truncated to yield the icosahedron. The order of the Platonic solids can thus be:

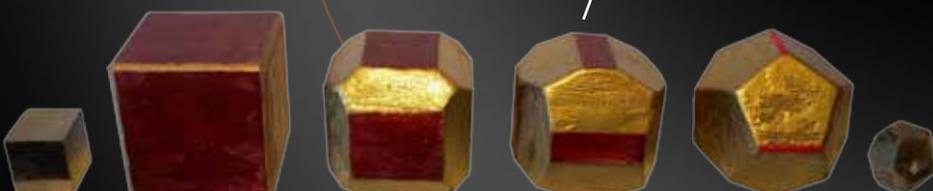


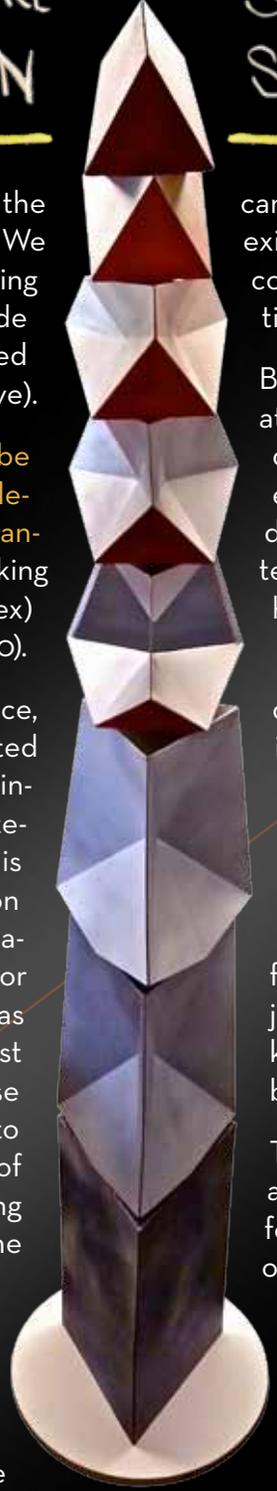
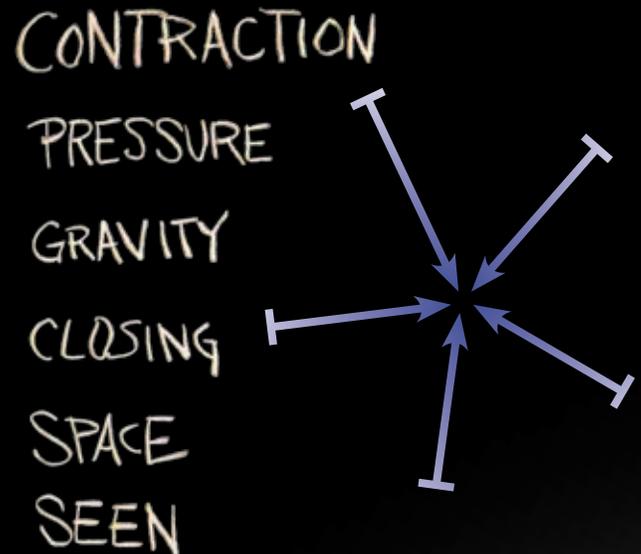
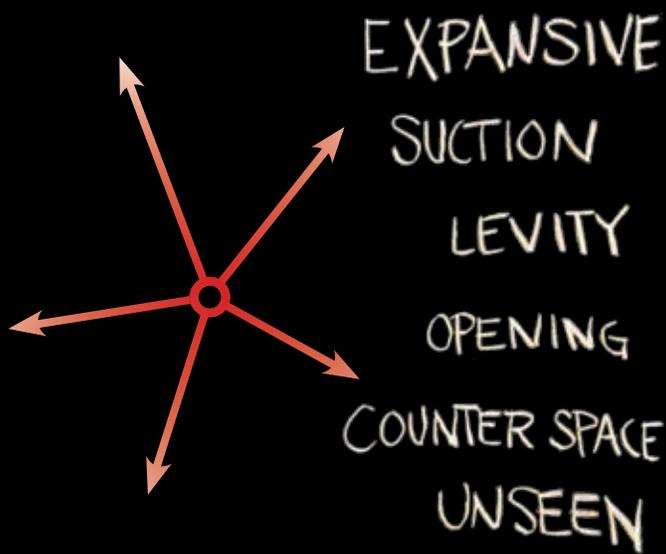
What is important about this sequence is that it uses the contractive principle of truncation to phenomenologically yield a coherent and complete transformative sequence which includes all of the Platonic solids. This is a new way of working with these forms and their order. In both Western and Eastern traditions, different orderings were used, but Frank's is the first sequence based on *phenomenological*, not abstract or concept-based, transformations of the forms.

The Chestahedron in a dodecahedron.



A cube transformed into a dodecahedron by pushing its lines into planes.





How does this contractive sequencing of the Platonic solids relate to the Chestahedron? We can begin to address this question by noticing that the contractive sequence is only one side of a larger complementarity that is balanced by expansive movements (see chart above).

The Chestahedron is unique in that it can be created from a tetrahedron in two complementary ways: one contractive and one expansive. The contractive method works by taking the tetrahedron and spinning it (like a vortex) within a cube (see image at the bottom of page 10).

This procedure has real symbolic significance, as the Platonic solids have been associated with the four elements (thought to be principles underlying the creation of the material world) since antiquity. The tetrahedron is Fire, the octahedron is Air, the icosahedron is Water, the cube is Earth, and the dodecahedron is the Universe, Consciousness, or simply the 5th element. The tetrahedron was identified by Plato in his *Timaeus* as the most fundamental of the forms, in part because it is the simplest, having the least volume to surface area ratio. The contractive mode of creating the Chestahedron requires putting the Fire in the Earth, and transforming the Fire through a vortexial, spiral motion. This is exactly the same pattern identified as the archetype of alchemical transformation. When we understand the symbolic nature of Fire and Earth as will and body, process and product, activity and rest, we

can see how the Chestahedron comes into existence as a balancing between these two complementary poles through their unification in a single transformative movement.

But the Chestahedron can also be created in another way, by taking the tetrahedron and opening it up like a flower. This expansive process yields the Chestahedron as an intermediate form between the tetrahedron and another tetrahedron that has sides of exactly double the original.

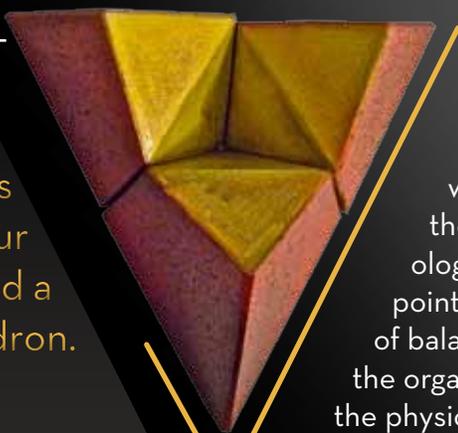
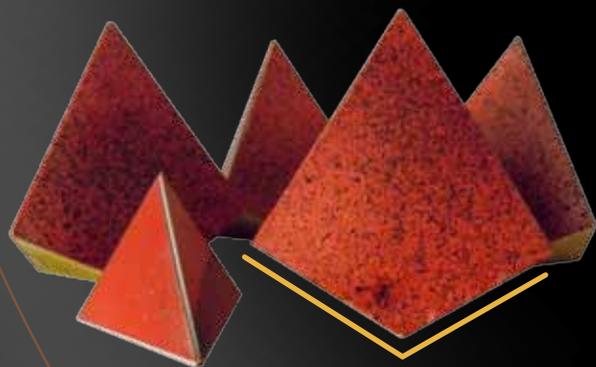
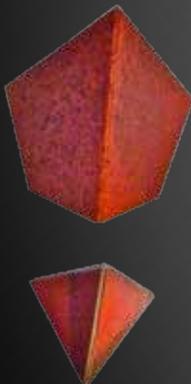
Frank has discovered that by keeping the dihedral angle (the angle made by the meeting of two faces) constant through the unfolding process, a series of new forms are created (see image at left) that require the faces to become concave, as if a force of suction inside the form were drawing the faces towards its center. Each of these new forms is still based on a seven-sided form just like the Chestahedron, made of three kite shapes and four equilateral triangles, but the kite-shaped faces become concave.

The significance of this process is that it has allowed Frank to see how the seven-sided form is an archetype that appears in all the other Platonic forms. In other words, *all the Platonic forms are unified by the way they relate to the archetype of the seven-sided form*. This expansive process offers a balance to the contractive process: together they paint a more comprehensive picture

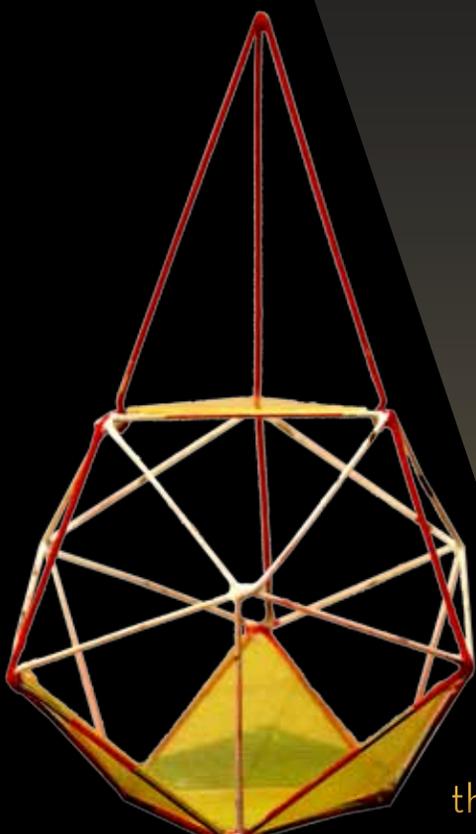
of the creation of form *in general* through the balancing relations that occur across the boundary between the two polarities. In other words, the task, even in geometry, is to harmonize the contractive and expansive, the material and spiritual, the seen and the unseen. The archetype of the seven-sided form relates directly to both the contractive and expansive poles of creation as a mediator between them. But what is most significant is that through its morphology, it yields a *particular* form: the Chestahedron. The Chestahedron is the one seven-sided form that has faces of equal area. It is therefore THE form that most represents a harmonic balancing between the material and spiritual, between the contractive and expansive processes of creation.



The tetrahedron as composed of four 7-sided forms and a nested tetrahedron.



The relationship between the Chestahedron and the human heart takes on a new significance in light of this discovery. The heart is the organ most concerned with balance (of substances in the blood, of the rhythms occurring in the rest of the physiology). The geometry of the Chestahedron points to the human heart not just as the organ of balance for the physical body alone, but also as the organ that works to establish harmony *between* the physical body and our spiritual nature. The heart is more than just an organ for moving blood through the body—it is also a *sense* organ that monitors the way that the spiritual and the material meet in the human being as a whole. Like our other sense organs, the heart can benefit from training—it can be developed further and utilized transformatively in every day life. Ancient wisdom's identification of the importance of the heart in spiritual development now can be grounded in a geometric reality.



Relationship between the 7-sided form and the icosahedron.

Chestahedron by rotating a tetrahedron within a cube.



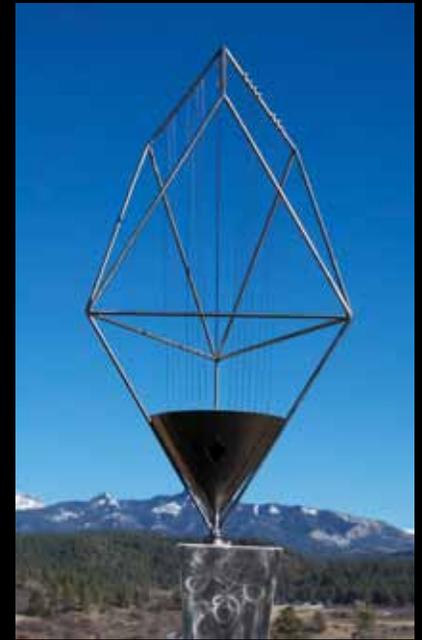
MAKING CONNECTIONS



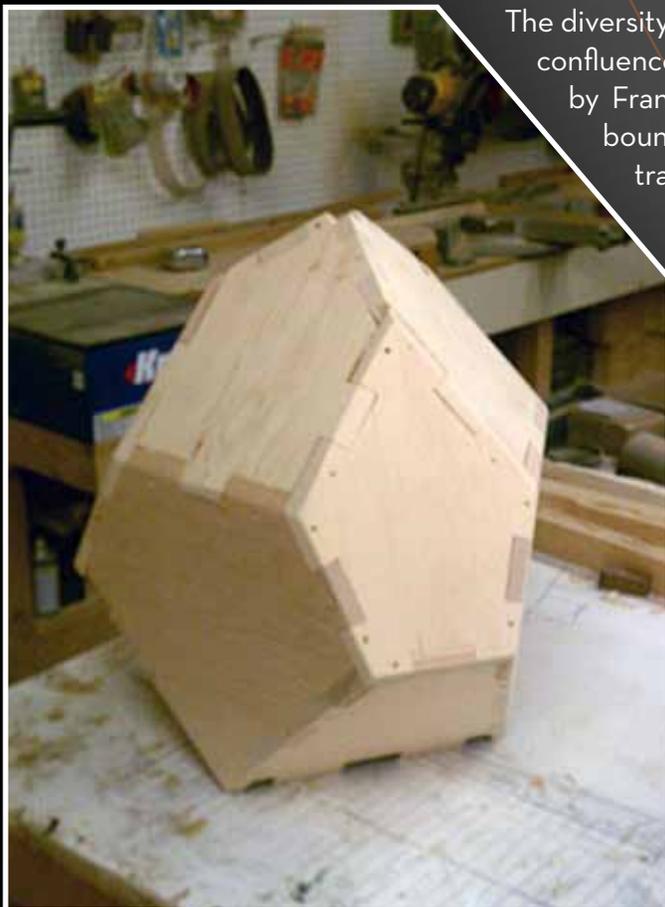
The importance of Frank's work is being noted, but deserves much wider attention. The Mathematical Section of the Anthroposophical Society has recognized his lasting contribution to the development of anthroposophy, and has acquired a Chestahedron to be a permanent part of Dornach's collection at the Goetheanum.

In 2012 Camphill Ghent purchased a Venus Bell as a centerpiece for their new senior living community in New York, and the Ruskin Mill Educational Trust helped Freeman College cast a Chestahedron Bell for their own grounds in England. The decatria is being used as a template for a new kind of beehive form, and Frank has inspired new endeavors via a research residency program offered through the Threefold Educational Center.

Frank, who conducts dynamic and engaging lectures and workshops across the globe, was invited to share his discoveries both publicly and privately at the nation's premier design school, the Rhode Island School of Design, which subsequently acquired a Chestahedron to be a part of their permanent collection. His work has also inspired new artistic explorations, for example in Ross Barable's creation of a large wind harp based on the Chestahedron. It was also discovered by Seth Miller that the geometry of the Chestahedron, despite its unique shape, can be used to make a complete ring with 96 Chestahedra, a linear column, and rings of either 4 or 8 Chestahedra, as well as other fascinating and unexpected forms.

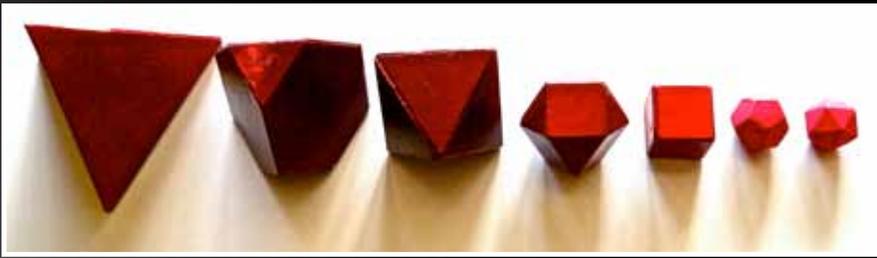


The Chesta-Tetra
Wind Harp



The diversity of these sources of recognition paints a picture of an unusual confluence of artistic, spiritual, and scientific connections engendered by Frank's discoveries. The work crosses established disciplinary boundaries with a formidable but essential challenge: to utilize transdisciplinary methods that speak to the human being as a whole in a multilayered, evolving cosmos.

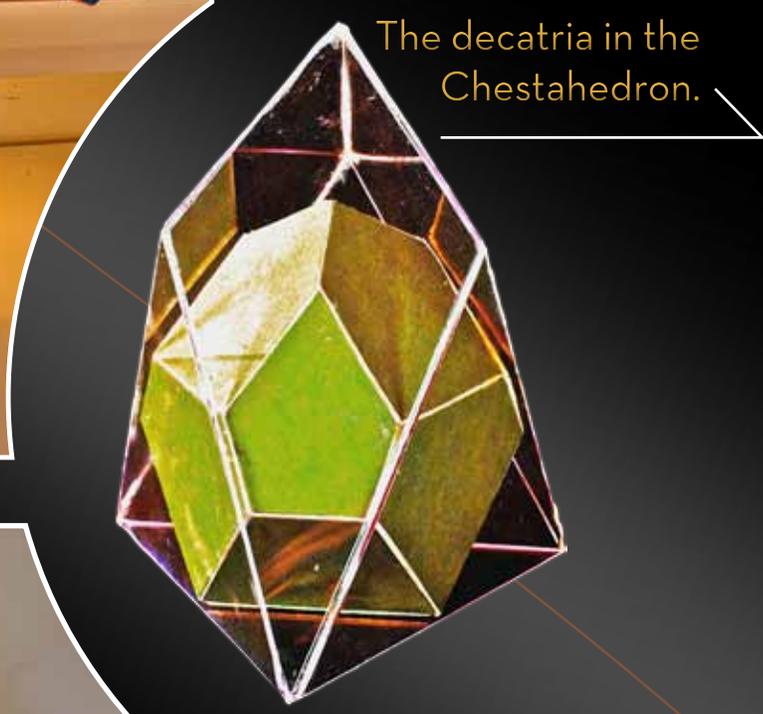




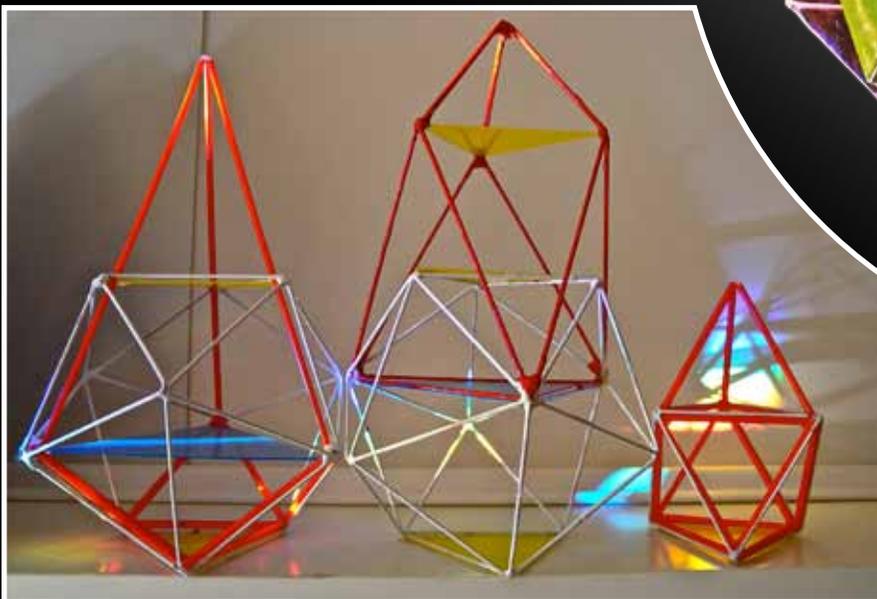
The phenomological sequencing of the Platonic forms, in scale to each other.



The morphological generation of the seven-sided form as an archetype by opening the tetrahedron, with the Chestahedron as the balance point.

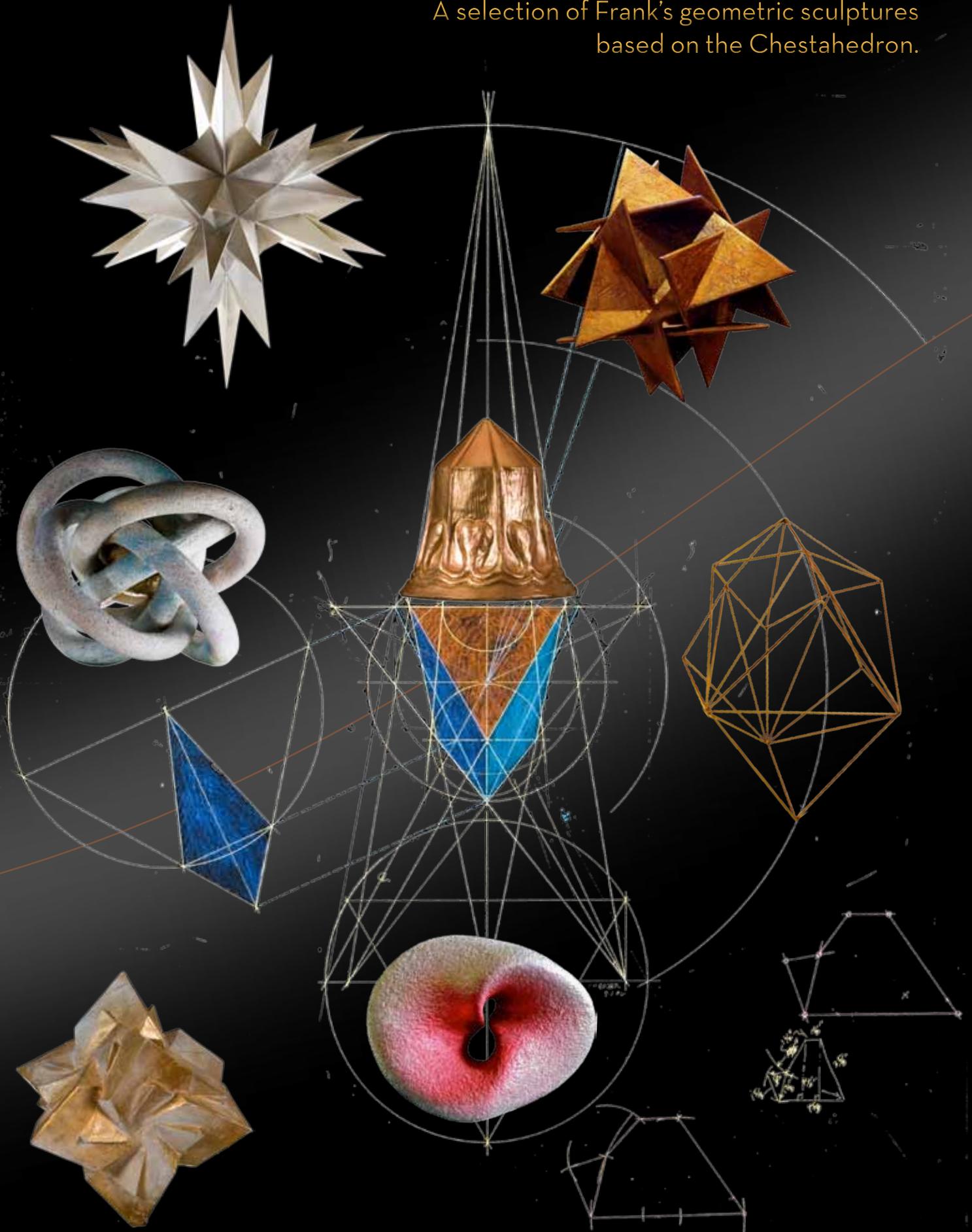


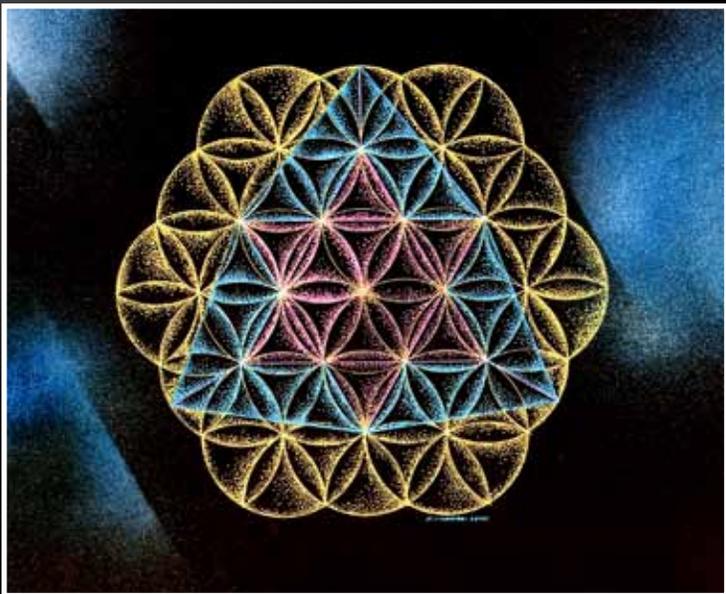
The decatria in the Chestahedron.



The seven-sided form in relation to the dodecahedron, icosahedron, and octahedron.

A selection of Frank's geometric sculptures
based on the Chestahedron.

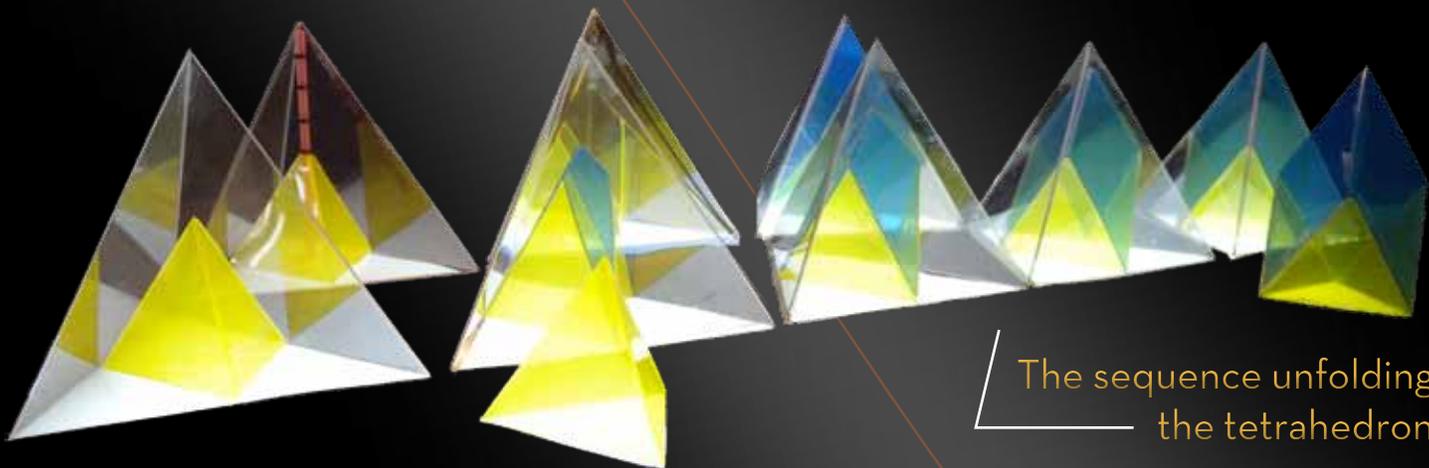




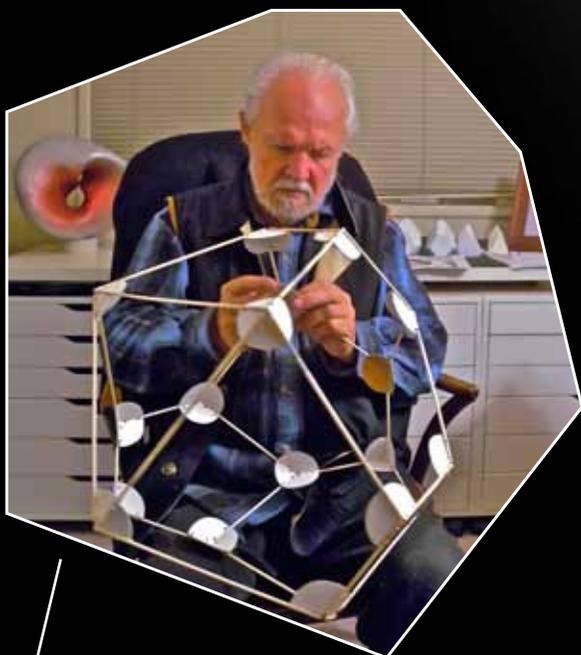
Turning the
Chestahedron
inside-out



The Chestahedron's geometry
integrates with the Flower of Life



The sequence unfolding
the tetrahedron

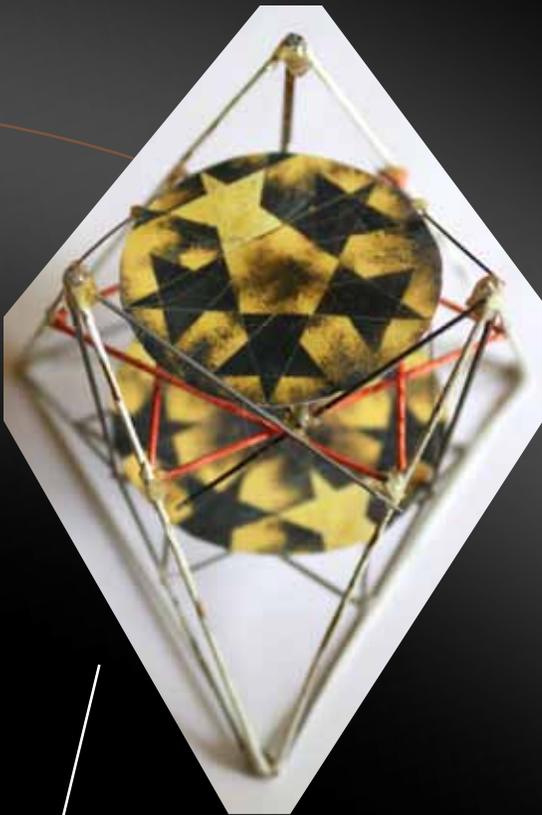
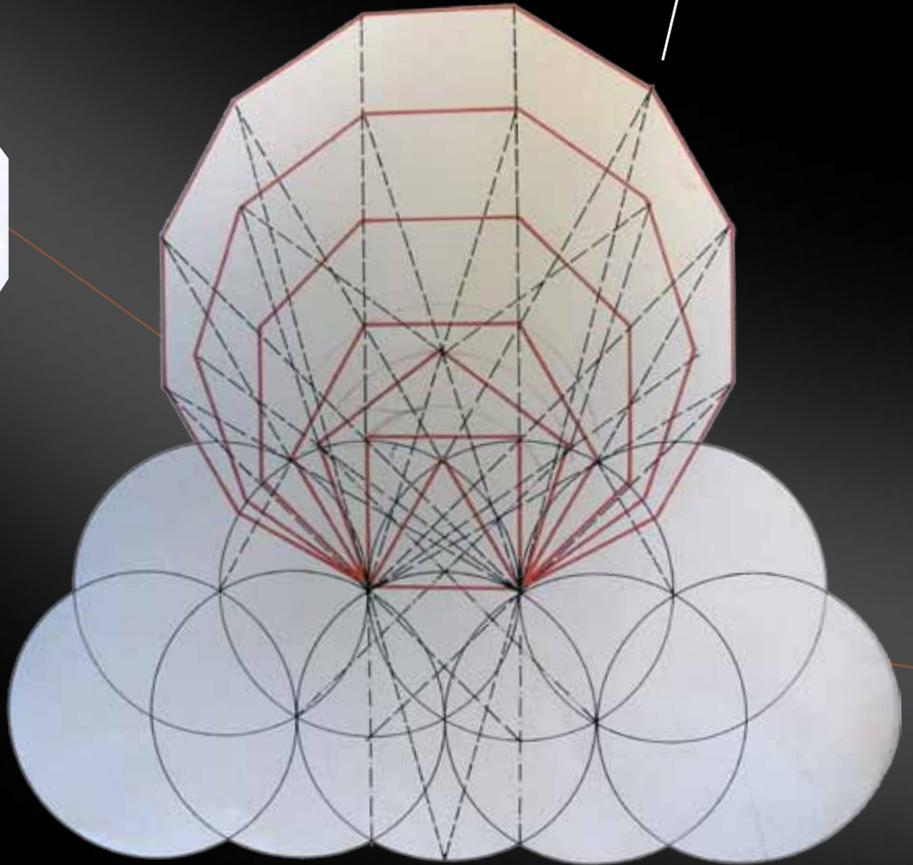


The decatria is a potential alternative
to geodesic dome construction

The Venus form, the
Chestahedron
through
time

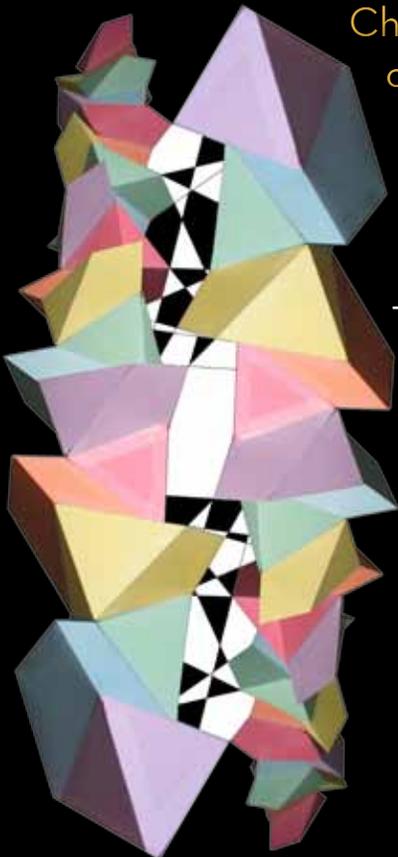


Relationships between successive polygons



A perfect hexagon slices (in red) through the Chestahedron

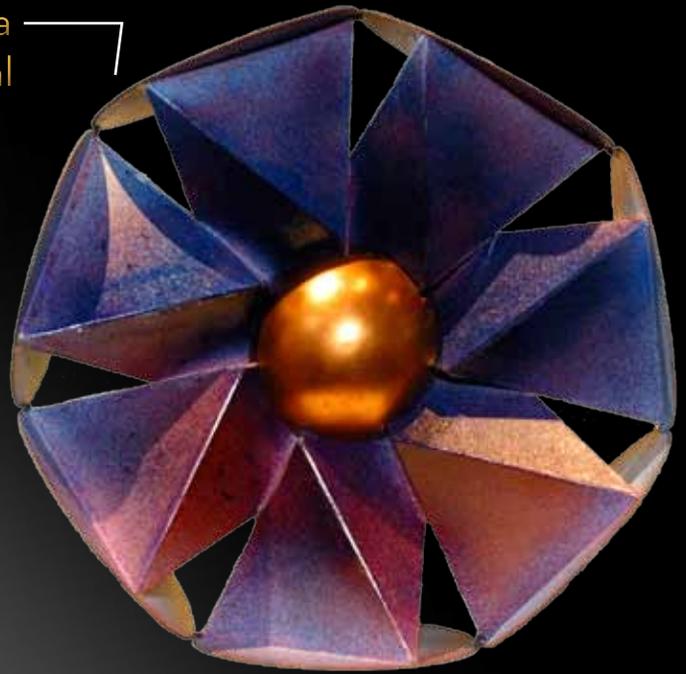
Chestahedra can be connected to form a linear column



Frank hard at work on new geometry



Seven Chestahedra meeting in a central sphere



Two stellated Chestahedra interpenetrating in a sphere



The separate stages of the stellation of the Chestahedron

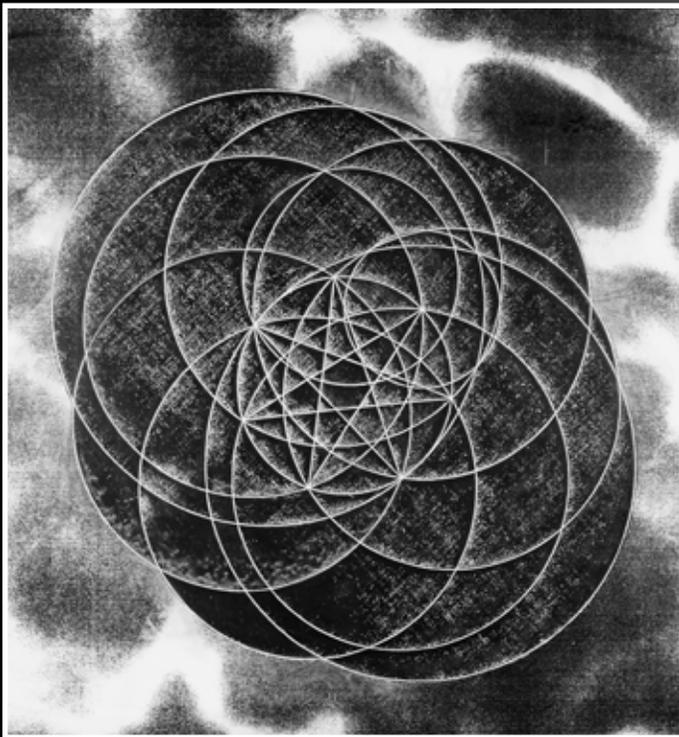




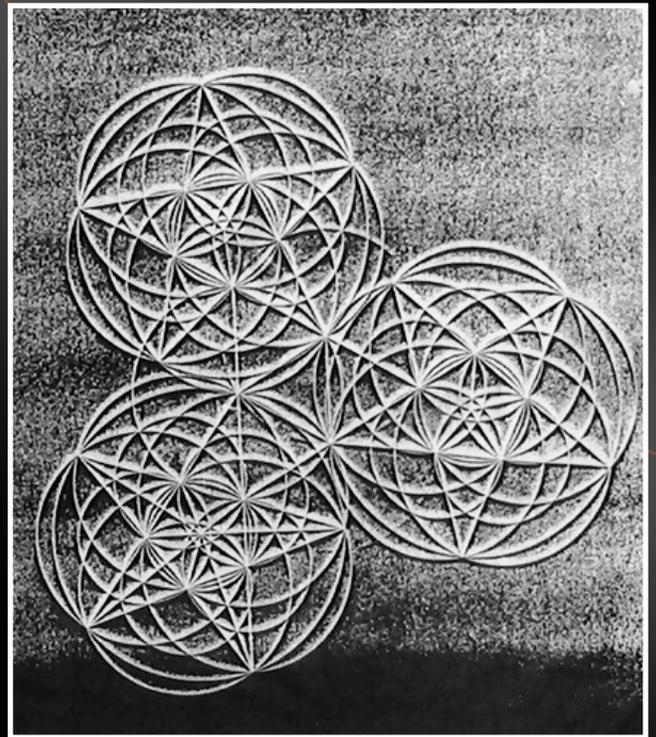
Steiner's "Saturn" seal, which provided inspiration for the Chestahedron.



Frank discovered a new way to construct a square whose perimeter is equal to the circumference of a circle.



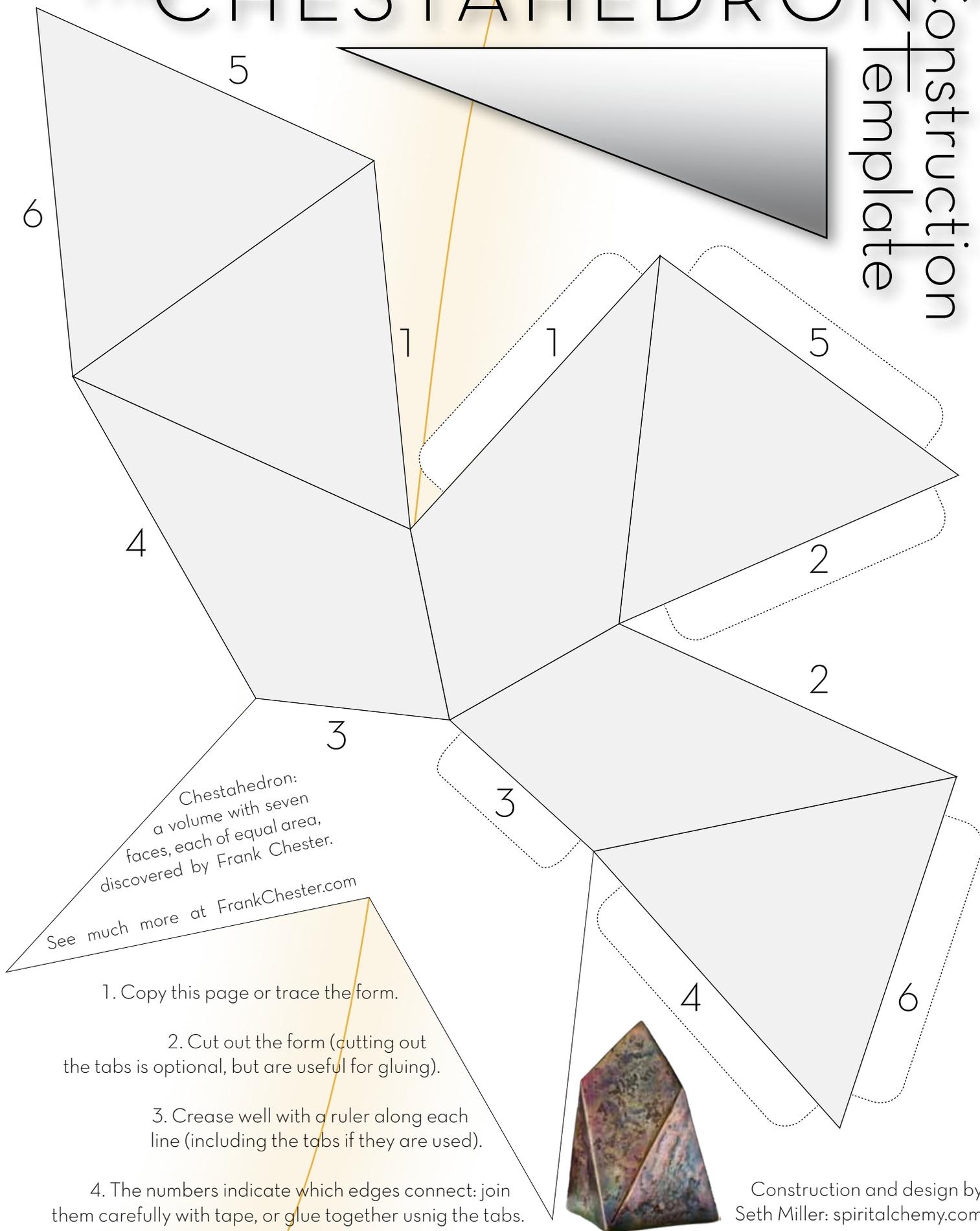
The vesica-pisces and the seven-fold geometry of the Chestahedron.



The 2-dimensional geometry underlying the Chestahedron.

The CHESTAHEDRON

Construction
template

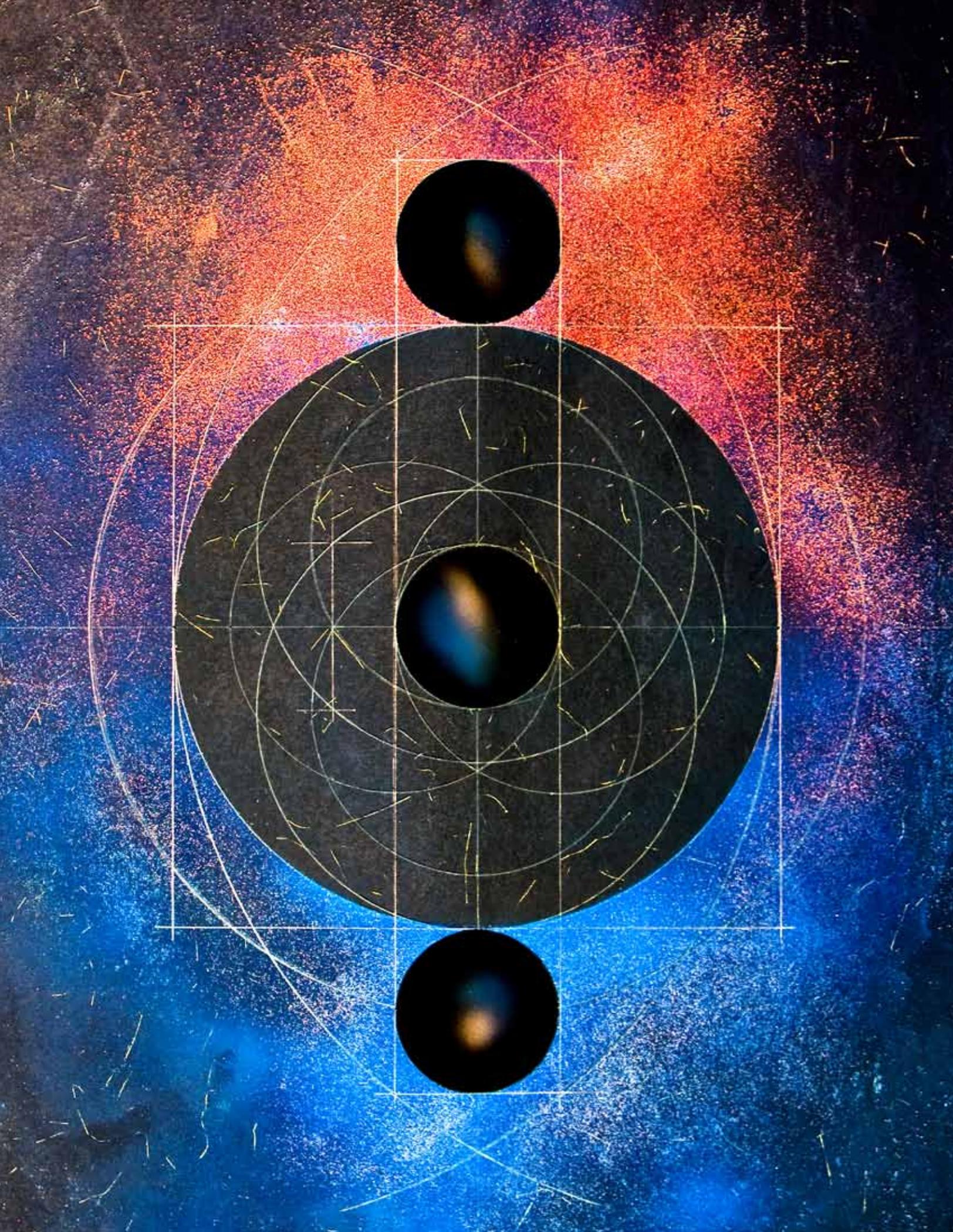


Chestahedron:
a volume with seven
faces, each of equal area,
discovered by Frank Chester.

See much more at FrankChester.com

1. Copy this page or trace the form.
2. Cut out the form (cutting out the tabs is optional, but are useful for gluing).
3. Crease well with a ruler along each line (including the tabs if they are used).
4. The numbers indicate which edges connect: join them carefully with tape, or glue together using the tabs.

Construction and design by
Seth Miller: spiritalchemy.com



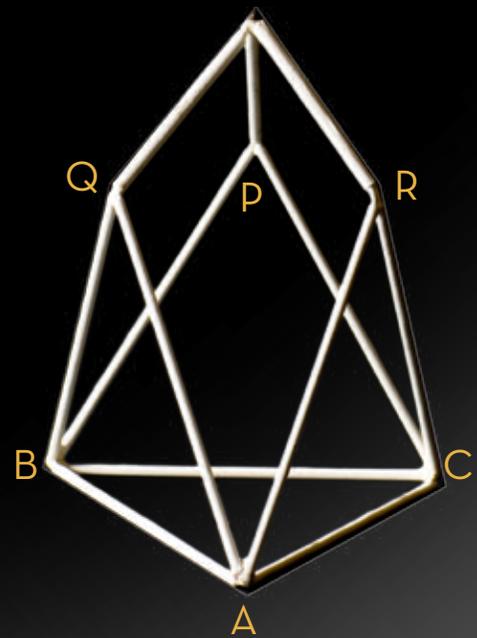
The full mathematics of the Chestahedron are known, courtesy of Dr. Karl Maret.
 See details at: frankchester.com/2012/chestahedron-calculations

The dihedral angle Theta is the angle between the base triangle ABC with any of the other three upper triangles (the "petals" of the opening Tetrahedron).

Below are the X-Y-Z Chestahedron coordinates with 0,0,0 as the base triangle's center, and with a side of length = 1.
 (X Axis = left-right, Y axis = up-down, Z axis = front-back)

Base Triangle, Vertices ABC		
Ax, with Ay = 0, Az = 0	Bx, with By = 0, Bz = -0.50	Cx, with Cy = 0, Cz = 0.50
0.577350269	-0.288675135	-0.288675135

Upper Triangles, Vertices PQR		
Px	Py	Pz
-0.361608072	0.86294889	0
Qx	Qy	Qz
0.180804036	0.86294889	-0.313161776
Rx	Ry	Rz
0.180804036	0.86294889	0.313161776



Dihedral angle Theta:	94.83092618 °
Fraction of Theta in Minutes:	49.8555709 '
Fraction of Theta in Seconds:	51.33425387 "
Theta in radians:	1.655111895 rad
Dihedral angle Omega (base triangle to kite):	65.32005574 °
Angle Omega in radians:	1.14005004 rad

Additional Calculations:	
Height (Apex point T) Y-coordinate only, Tx=Tz= 0	1.256407783
PQ = QR =RQ = Horiz of Kite	0.626323553
AT=BT=CT= Vertical of Kite	1.382712498
Area of any Equilateral Triangle (fixed)	0.433012702
Area of Kite = 0.5 x AT x PQ	0.433012702
Total Surface Area of Chestahedron (4 x Triangle + 3 x Kite SA)	3.031088913
Length of top edges of Kite = PT=QT=RT (Bottom edges of the Kite always = 1.)	0.534387779

Angles inside of Kite:	
Angle Alpha (PTQ) at top of Kite	71.75012248 °
Angle Beta (PBQ) at bottom of Kite	36.49975504 °
Side Angles of Kite at Vertices P, Q, or R	125.8750612 °

Radius of Circle (r1) enclosing Base Triangle	0.577350269
Radius of Circle enclosing Triangle PQR	0.361608072
Radius of Circle circumscribed by Base Triangle	0.288675135

Angle Theta for octahedral opening	109.4712204
Angle Theta for Height being Phi exactly	108.9733377



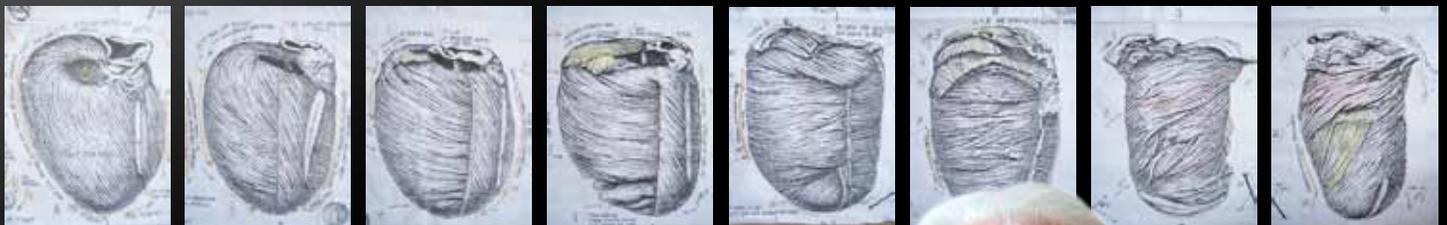
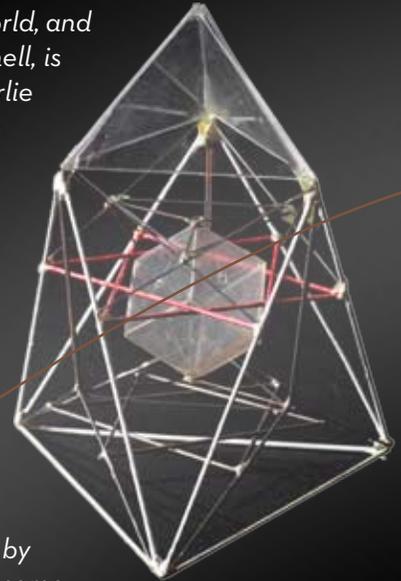
The Flame of Warmth

Frank's work helps crack open new avenues of thinking, new ways of understanding our world, and provides insights that help us better understand ourselves. What he is doing, in a nutshell, is exploring the relationship between geometric form and the dynamic principles that underlie the operations of natural and physiological processes, specifically those related to the human being. He did not set out with this goal in mind, but rather followed the trail of a simple question concerning the possibility of a seven-sided geometric form with faces of equal surface area.

As a sculptor, Frank didn't just think about this idea, he made it - "it" in this case being a new geometric form that had never before been discovered. The significance of this is not just that such a form exists, but that the form has meaningful relationships to other phenomenon which are unveiled through a particular way of engaging with the research process itself. In other words, the significance of Frank's achievements lie equally in the realm of the process by which his discoveries were made as in the discoveries themselves.

Frank's work is moldbreaking in a very important way, and this is in terms of the process by which he does his work. The standard methods by which science builds upon itself have some significant blind spots and assumptions that have historically limited its potential (and created some nasty problems along the way, even while helping elsewhere). Most significantly, the methodologies used are generally designed to eliminate what is innately human from the research process, in an attempt to 'control' the situation so that results fit within the assumptions of the experimental design. This style of research provides a certain kind of answer: answers which are geared towards application through reductionistic analysis and control of component parts. Such approaches, and the answers they provide, are proving to be less and less able to provide fruitful metaphors for a sustainable future.

Frank's work exemplifies an approach that helps bridge this entrenched gap, bringing forth a soulfully engaged style of research that weaves between art and science, allowing the strengths of each to fructify the weaknesses of the other. The result is an integrated style of research that can comfortably deal with both the 'outer' and the 'inner,' without over-privileging one or disparaging the other. In addition to this, his work is moldbreaking in that it constitutes a modern extension of the tradition of sacred geometry, providing a number of well-grounded insights that testify to the integration between humans and the laws of the cosmos. — Seth T. Miller, PhD.c.



FRANKCHESTER.COM

Frank is an artist, sculptor, teacher, and geometrician based in San Francisco. Since encountering the work of Rudolf Steiner, Frank has been exploring the relation between form and spirit.

Seth Miller is a teacher, designer, and webmaster. He is currently finishing his PhD dissertation exploring epistemological connections between anthroposophy and second-order cybernetics.

BOOK DESIGN: SETH T. MILLER, SPIRIT ALCHEMY DESIGN

PHOTOGRAPHY: JAMES HEATH & DANA ROSSINI ROGERS

