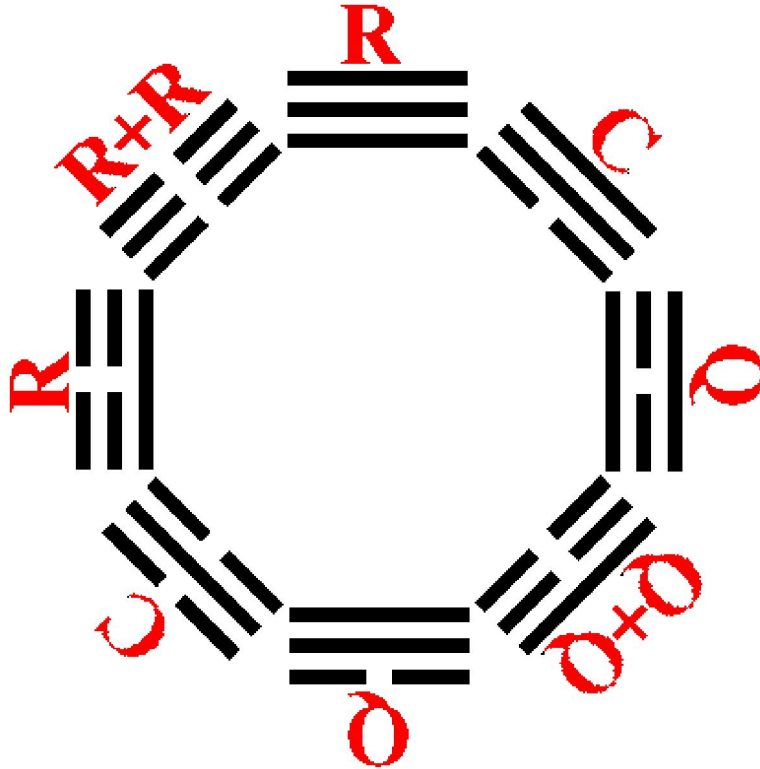


E8, The Na Yin and the Central Palace of Qi Men Dun Jia



By John Frederick Sweeney

Abstract

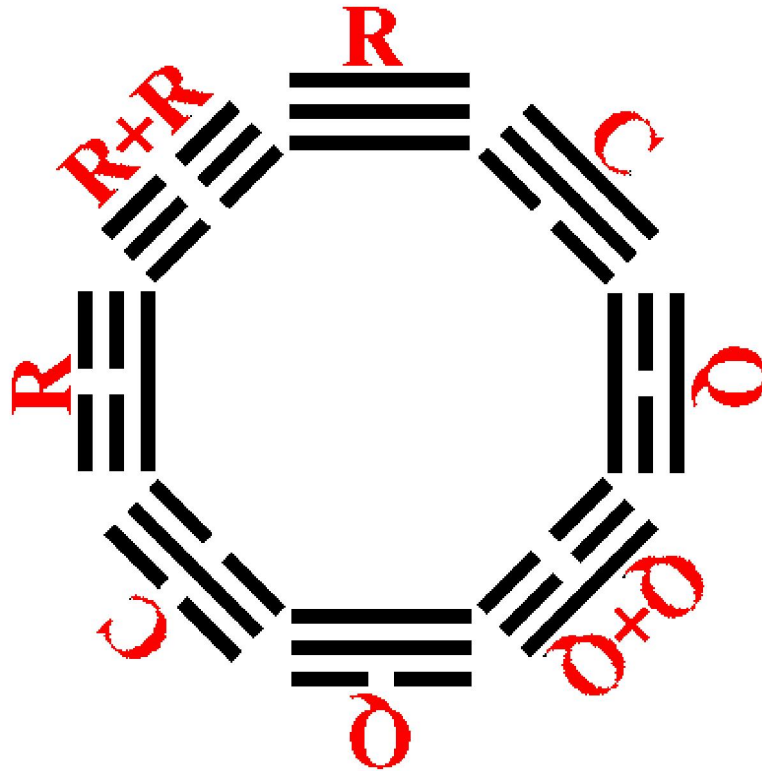
The ancient Chinese divination method called Qi Men Dun Jia is mathematically based on the Clifford Clock, which is a ring of Clifford Algebras related through the Bott Periodicity Theorem. On top of this lies the icosahedra or A_5 with its sixty or one hundred twenty elements. A_5 in the model functions to account for Time, as well as the Five Elements and the Na Jia, additional elements of Chinese metaphysics used in divination. This icosahedra is composed of three Golden Rectangles. The Golden Rectangles are related to three Fano Planes and the octonions, which are in turn related to the Golden Section. This provides the basis for the Lie Algebra and lattice of E_8 , again with its own Golden Section properties.

In a previous paper we stated that Qi Men Dun Jia comprises a scientific model which is capable of accurate prediction and reproduction of results by other analysts who follow the same methods. In this strictly scientific sense, then, we attempt to explain the theory behind Qi Men Dun Jia which allows for this type of accurate scientific prediction. In the present paper we will present the fundamentals of the Qi Men Dun Jia model, which is built around the Lie Algebra and Lattice E8.

In the view of my Da Liu Ren teacher, Mr. Wu Jian Hong, it is important to start at the sub-atomic level in order to discuss models of divination, at least in a mathematical or fundamental philosophical manner. For this reason, we shall do the same here as we discuss the Qi Men Dun Jia Cosmic Board.

The Clifford Clock

The Clifford Clock is by now a well - established concept in mathematical physics, having been discovered and written about by Andrez Trautman as the Spinorial Chessboard; John Baez has described this, and the Clifford Clock has been included in his Voudou Physics model by Frank Tony Smith. Wolfram on its website hosts a Flash version of the clock, although sadly incomplete.



The basic concept of the Clifford Clock is as Frank Tony Smith described in an email to the author on 25 June 2013:

The Clifford Clock of the nature of entries in the matrix algebra of Clifford Algebra goes from

- 1 = Complex = Cl(1)
- to 2 = Quaternions = Cl(2)
- to 3 = Quaternions + Quaternions
- to 4 = Quaternions
- to 5 = Complex
- to 6 = Real
- to 7 = Real + Real
- to 8 = Real = Cl(8) (also = 0 because it is a cycle of period 8).

Qi Men Dun Jia Cosmic Board

The Qi Men Dun Jia Cosmic Board consists of eight "palaces" which are arrayed in the same manner as the Clifford Clock, and form an isomorphic relationship to the Clifford Clock, since each palace is the "home" of a trigram from Chinese metaphysics, most widely known from the I Ching. Each of these trigrams functions as an archetype, related to dozens of concepts, all built around the central concept, such as "mountain," "Father," or "Mother."

Given the isomorphic relationship to the Clifford Clock, we state here that the Clifford Clock forms the mathematical foundation for the Qi Men Dun Jia Cosmic Board.

The operating principle in the clock is Bott Periodicity, with corresponding period-8 phenomena; or the idea that matrices and algebras reach their equivalents after each round of eight units.

Bott Periodicity

A graduate student describes Bott Periodicity in this way, perhaps easier to explain than the Wikipedia entry below:

The Bott periodicity theorem was discovered by Raoul Bott in 1950 by using elements of Morse theory[4]. After that, many others came up with different proofs of Bott periodicity (see Husemoller[6], p.150). Bott periodicity plays a fundamental role in the definition and understanding of K-theory, the generalized cohomology theory defined by vector bundles. In 1964, Atiyah and Bott gave, as they say in[3], an "elementary proof" of the periodicity theorem. This thesis explains the techniques used by Atiyah and Bott in their proof.

The periodicity theorem asserts that there is an explicit isomorphism between $K(X) \otimes K(S^2)$ and $K(X \times S^2)$ for all compact Hausdorff spaces X .

Wikipedia has this entry:

the **Bott periodicity theorem** describes a periodicity in the [homotopy groups](#) of [classical groups](#), discovered by [Raoul Bott](#) ([1957](#), [1959](#)), which proved to be of foundational significance for much

further research, in particular in [K-theory](#) of stable complex [vector bundles](#), as well as the [stable homotopy groups of spheres](#). Bott periodicity can be formulated in numerous ways, with the periodicity in question always appearing as a period-2 phenomenon, with respect to dimension, for the theory associated to the [unitary group](#). See for example [topological K-theory](#).

There are corresponding period-8 phenomena for the matching theories, (real) [KO-theory](#) and (quaternionic) [KSp-theory](#), associated to the real [orthogonal group](#) and the quaternionic [symplectic group](#), respectively. The [J-homomorphism](#) is a homomorphism from the homotopy groups of orthogonal groups to [stable homotopy groups of spheres](#), which causes the period 8 Bott periodicity to be visible in the stable homotopy groups of spheres.

The context of Bott periodicity is that the [homotopy groups of spheres](#), which would be expected to play the basic part in [algebraic topology](#) by analogy with [homology theory](#), have proved elusive (and the theory is complicated). The subject of [stable homotopy theory](#) was conceived as a simplification, by introducing the [suspension](#) ([smash product](#) with a [circle](#)) operation, and seeing what (roughly speaking) remained of homotopy theory once one was allowed to suspend both sides of an equation, as many times as one wished. The stable theory was still hard to compute with, in practice.

What Bott periodicity offered was an insight into some highly non-trivial spaces, with central status in topology because of the connection of their [cohomology](#) with [characteristic classes](#), for which all the (*unstable*) homotopy groups could be calculated. These spaces are the (infinite, or *stable*) unitary, orthogonal and symplectic groups U , O and Sp . In this context, *stable* refers to taking the union U (also known as the [direct limit](#)) of the sequence of inclusions

$$U(1) \subset U(2) \subset \cdots \subset U = \bigcup_{k=1}^{\infty} U(k)$$

and similarly for O and Sp . Bott's (now somewhat awkward) use of the word *stable* in the title of his seminal paper refers to these stable [classical groups](#) and not to [stable homotopy](#) groups.

The Geography of Time

The primary mistaken assumption of western science is that Time is a constant. This is an entirely wrong assumption, but it forms the basis for all of western science. Reflect deeply on that statement.

Space - Time? More of the nonsense that Albert Einstein dreamed up to mislead scientists. The Fourth Dimension? No. Time is Time, and it has a geography.

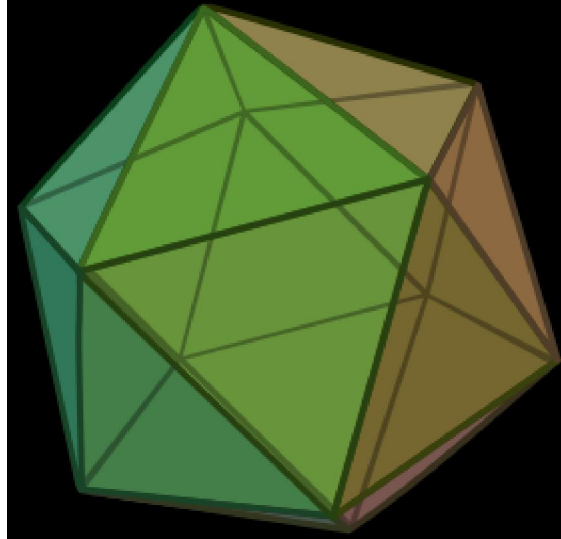
Time has geography and periodicity. That is to say that Time is not a constant, but that each day changes from one day to the next, and this is not meant in a mundane way. Each interval or unit of time has its own special character or flavor, unique unto itself, much as musical tone has its own special frequency.

The analogy is intended here, since the ancients of Sumeria, Babylon and China, and perhaps also Egypt and India, all measured Time by methods similar to how they measured music - in units of sixty. Base 60 Math or sexagenary math was used to measure musical sounds as well as to measure Time in many ancient cultures, and in accord with its convenience, we still use Base 60 Math today to keep time.

To account for Time in our Qi Men Dun Jia Cosmic Board, we shall adopt the icosahedron, at the suggestion of Tony Smith, who writes:

E8 is related geometrically (by the MacKay Correspondence) to the Icosahedron whose symmetry group has 60 elements (or 120 if you double it to take into account reflection symmetry).

The icosahedron in our model should fill the center palace, No. 5, which is regarded as empty, or the place where things originate.



Constructing the Icosahedron

Wikipedia carries this entry:

The following construction of the icosahedron avoids tedious computations in the [number field](#) $\mathbb{Q}[\sqrt{5}]$ necessary in more elementary approaches.

The existence of the icosahedron amounts to the existence of six [equiangular lines](#) in \mathbb{R}^3 . Indeed, intersecting such a system of equiangular lines with a Euclidean sphere centered at their common intersection yields the twelve vertices of a regular icosahedron as can easily be checked. Conversely, supposing the existence of a regular icosahedron, lines defined by its six pairs of opposite vertices form an equiangular system.

In order to construct such an equiangular system, we start with this 6×6 square [matrix](#):

$$A = \begin{pmatrix} 0 & 1 & 1 & 1 & 1 & 1 \\ 1 & 0 & 1 & -1 & -1 & 1 \\ 1 & 1 & 0 & 1 & -1 & -1 \\ 1 & -1 & 1 & 0 & 1 & -1 \\ 1 & -1 & -1 & 1 & 0 & 1 \\ 1 & 1 & -1 & -1 & 1 & 0 \end{pmatrix}.$$

A straightforward computation yields $A^2 = 5I$ (where I is the 6×6

identity matrix). This implies that A has [eigenvalues](#) $-\sqrt{5}$ and $\sqrt{5}$, both with multiplicity 3 since A is [symmetric](#) and of [trace](#) zero.

The matrix $A + \sqrt{5}I$ induces thus a [Euclidean structure](#) on the [quotient space](#) $\mathbb{R}^6 / \ker(A + \sqrt{5}I)$ which is [isomorphic](#) to \mathbb{R}^3 since the [kernel](#) $\ker(A + \sqrt{5}I)$ of $A + \sqrt{5}I$ has [dimension](#) 3. The image under the [projection](#) $\pi : \mathbb{R}^6 \rightarrow \mathbb{R}^6 / \ker(A + \sqrt{5}I)$ of the six coordinate axes $\mathbb{R}v_1, \dots, \mathbb{R}v_6$ in \mathbb{R}^6 forms thus a system of six equiangular lines in \mathbb{R}^3 intersecting pairwise at a common acute angle of $\arccos \frac{1}{\sqrt{5}}$. Orthogonal projection of $\pm v_1, \dots, \pm v_6$ onto the $\sqrt{5}$ -[eigenspace](#) of A yields thus the twelve vertices of the icosahedron.

A second straightforward construction of the icosahedron uses [representation theory](#) of the [alternating group](#) A_5 acting by direct [isometries](#) on the icosahedron.

We prefer the latter method, although the matrix method allows the lay reader more understanding of the matter at hand.

Time in traditional China, Japan and Korea was kept by units of 120 minutes, or the double hour. Therefore, if we wish to take into account reflection symmetry, as Tony suggests, then the 120 elements form an isomorphic relationship to the 120 minutes in the double hour. The Yellow Emperor's Classic on Internal Medicine states that humans have the potential to live to age 120, but most humans abuse the privilege.

We in fact need to take the icosahedron as it stands, and with reflection symmetry, since the icosahedron forms two additional isomorphic relations with key systems in Chinese metaphysics which we shall need to establish our model of the Qi Men Dun Jia Cosmic Board: the 60 Jia Zi and the 60 Na Yin. The 60 Jia Zi form the sexagenary cycle, or what I like to call the Cycle of Sixty. The traditional Chinese calendar used this cycle to account for years, months, days and hours, up to periods of 300 years, when the cycle would repeat itself.

This means that all the years, and all the months, days, and hours followed the same sexagenary pattern. Thus we speak of the Ba Zi or

the eight characters which form the double hour of one's birth. Another name of this is the Four Pillars of Destiny. Eight characters from the sexagenary cycle are used to record any specific double hour.

The 60 Na Yin have a far more esoteric function, and may be thought of as frequencies which were added to the traditional tones in the Chinese musical system. Each Na Yin is composed of a pair of opposed Heavenly Stems and Earth Branches, and the resultant mix comprises a specific material, such as "Roadside Dirt," or "Metal from the Ocean."

Plato and the Five Elements

Plato understood that the Five Elements were directly related to his Five Platonic Solids, but modern thinkers have enormous trouble trying to get their minds to accept this concept. In fact, Plato was correct, and we shall use the doctrine of the Na Yin to prove Plato's argument true. Perhaps Plato was not forthcoming enough with details to satisfy modern minds, or perhaps some things were lost in translation from ancient Greek.

The key to understanding the Five Elements has to do with the icosahedron and the Na Yin. This realm of knowledge was once widely known and widely shared in the ancient world, but such knowledge has become scarce in our contemporary world. Even in China today, good, solid, reliable information about the Na Yin is extremely difficult to find. This may be the reason why modern scientists have failed to understand Plato and so rejected his thesis about Five Elements.

In addition, the Greeks, the Hindus and the Chinese all have different versions of the Five Elements. It remains a historical mystery as to why that might be the case. In the Qi Men Dun Jia Cosmic Board, we introduce the Five Elements through the icosahedron, and imagine that Plato might have done the same. The icosahedron is composed of many small triangles.

The following text is a part from the book *Timaeus* by Plato:

"... In the first place, then, as is evident to all, fire and earth and water and air are bodies. And every sort of body possesses solidity, and every solid must necessarily be contained in planes; and every plane rectilinear figure is composed of triangles; and all triangles are originally of two kinds, both of which are made up of one right and two acute angles; one of them has at either end of the base the half of a divided right angle, having equal sides, while in the other the right angle is divided into unequal parts, having unequal sides.

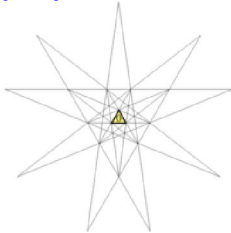
Stellations

The icosahedron is not simply one static design, but is directly related to what are known as stellations: star - shaped designs, which follow specified patterns.

Stellations form isomorphic relations to the 60 Na Yin, although the specific relationship between a specific stellation and its counterpart in the Na Yin has yet to be worked out. Much research needs to be done in this area, perhaps by taking frequency readings of the various phenomena specified by the Na Yin. Stellations resemble crystals, which follow periodicity patterns.

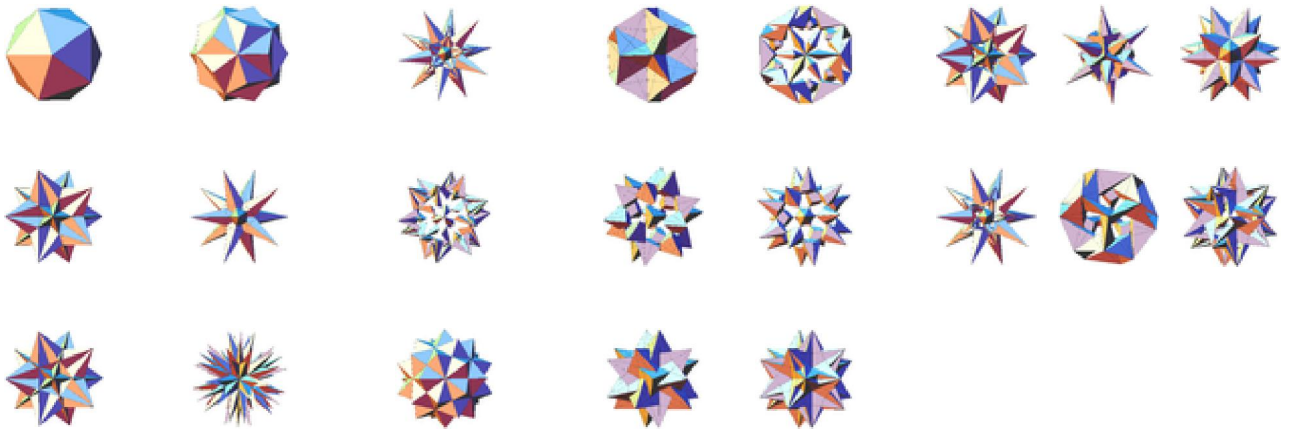
Wikipedia describes the stellations:

According to specific rules defined in the book [*The Fifty-Nine Icosahedra*](#), 59 [stellations](#) were identified for the regular icosahedron. The first form is the icosahedron itself. One is a regular [Kepler–Poinsot polyhedron](#). Three are [regular compound polyhedra](#).^[3]



21 of 59 stellations

The faces of the icosahedron extended outwards as planes intersect, defining regions in space as shown by this [stellation diagram](#) of the intersections in a single plane.



Five Elements

The stellations of the icosahedra form an isomorphic relationship with the Na Yin of Chinese metaphysics. It is thus through this isomorphic relationship that the Five Elements (Wood, Water, Fire, Earth, Metal) enter into the character of all matter.

Hypothesis:

The frequency of the matter defined by the Na Yin bears a direct relationship on the form of stellation. In other words, the reason why 60 permutations of the icosahedron exist is because each permutation is formed of a different type of matter, each of which has its own tone or frequency.

The Chinese have a mod formula for how Yin and Yang aspects are assigned to the Na Yin.

Na Yin Formula for Finding Five Element Associations

A= heavenly stems in order, b as Earth Branches in order, c as Five Element order with

Earth 0
Wood 1
Metal 2
Water 3
Fire 4

Defined number:

$$f(x)=[x+(x \bmod 2)]\div 2;$$

$$g(x)=[(x-1) \bmod 6] + 1;$$

We thus have:

$$c=[f(a)+f(g(b))] \bmod 5;$$

Example: Seeking the Five Element character of Geng Shen

Analysis: Geng falls into the 7th position of the Heavenly Stems, while Shen falls into the ninth position of the Earth Branches

A=7 B=9 for the following

$$f(a)=f(7)=[7+(7 \bmod 2)]\div 2=(7+1)\div 2=4;$$

$$g(b)=g(9)=[(9-1) \bmod 6] + 1=3;$$

$$f(g(b))=f(3)=[3+(3 \bmod 2)]\div 2=2;$$

$$c=[f(7)+f(g(9))] \bmod 5=(4+2) \bmod 5=1;$$

Based on the pre - defined order of Five Elements,
C=1, and 1 represents Wood, therefore Geng Shen belongs to Wood.

The remaining 59 Na Yin may be inferred from this example.

Binary Systems

Every aspect of Chinese metaphysics includes the concepts of Yin and Yang, which derive from the Tai Ji, or Yin Yang symbol. Therefore, we include binary systems in our model as a means of incorporating systems which are isomorphic to Yin and Yang. We remind the reader that the eight trigrams of the Clifford Clock have binary qualities, as do the points on the Fano Plane.

Binary Icosahedral Group from Wikipedia

In [mathematics](#), the **binary icosahedral group** **2I** or $\langle 2,3,5 \rangle$ is a certain [nonabelian group](#) of [order](#) 120. It is an [extension](#) of the [icosahedral group](#) I or $(2,3,5)$ of order 60 by a [cyclic group](#) of order 2, and is the [preimage](#) of the icosahedral group under the 2:1 [covering homomorphism](#)

$$\text{Spin}(3) \rightarrow \text{SO}(3)$$

of the [special orthogonal group](#) by the [spin group](#). It follows that the binary icosahedral group is a [discrete subgroup](#) of $\text{Spin}(3)$ of order 120.

It should not be [confused with the full icosahedral group](#), which is a different group of order 120, and is rather a subgroup of the [orthogonal group](#) $O(3)$.

The binary icosahedral group is most easily described concretely as a discrete subgroup of the unit [quaternions](#), under the isomorphism $\text{Spin}(3) \cong \text{Sp}(1)$ where $\text{Sp}(1)$ is the multiplicative group of unit quaternions. (For a description of this homomorphism see the article on [quaternions and spatial rotations](#).)

Explicitly, the binary icosahedral group is given as the union of the 24 [Hurwitz units](#)

$$\{ \pm 1, \pm i, \pm j, \pm k, \frac{1}{2} (\pm 1 \pm i \pm j \pm k) \}$$

with all 96 quaternions obtained from

$$\frac{1}{2} (0 \pm i \pm \varphi^{-1}j \pm \varphi k)$$

by an [even permutation](#) of coordinates (all possible sign combinations).

Here $\varphi = \frac{1}{2} (1 + \sqrt{5})$ is the [golden ratio](#).

In total there are 120 elements, namely the unit [icosians](#). They all have unit magnitude and therefore lie in the unit quaternion group $\text{Sp}(1)$.

The [convex hull](#) of these 120 elements in 4-dimensional space form a

[regular polychoron](#), known as the [600-cell](#).

Central extension

The binary icosahedral group, denoted by $2I$, is the [universal perfect central extension](#) of the icosahedral group, and thus is [quasisimple](#): it is a perfect central extension of a simple group.

Explicitly, it fits into the [short exact sequence](#)

$$1 \rightarrow \{\pm 1\} \rightarrow 2I \rightarrow I \rightarrow 1.$$

This sequence does not [split](#), meaning that $2I$ is *not* a [semidirect product](#) of $\{\pm 1\}$ by I . In fact, there is no subgroup of $2I$ isomorphic to I .

The [center](#) of $2I$ is the subgroup $\{\pm 1\}$, so that the [inner automorphism group](#) is isomorphic to I . The full [automorphism group](#) is isomorphic to S_5 (the [symmetric group](#) on 5 letters), just as for $I \cong A_5$ - any automorphism of $2I$ fixes the non-trivial element of the center (-1), hence descends to an automorphism of I , and conversely, any automorphism of I lifts to an automorphism of $2I$, since the lift of generators of I are generators of $2I$ (different lifts give the same automorphism).

Superperfect

The binary icosahedral group is [perfect](#), meaning that it is equal to its [commutator subgroup](#). In fact, $2I$ is the unique perfect group of order 120. It follows that $2I$ is not [solvable](#).

Further, the binary icosahedral group is [superperfect](#), meaning abstractly that its first two [group homology](#) groups vanish:

$H_1(2I; \mathbf{Z}) \cong H_2(2I; \mathbf{Z}) \cong 0$. Concretely, this means that its abelianization is trivial (it has no non-trivial abelian quotients) and that its [Schur multiplier](#) is trivial (it has no non-trivial perfect central extensions). In fact, the binary icosahedral group is the smallest (non-trivial) superperfect group.

The binary icosahedral group is not [acyclic](#), however, as $H_n(2I, \mathbf{Z})$ is cyclic of order 120 for $n = 4k+3$, and trivial for $n > 0$ otherwise, ([Adem & Milgram 1994](#), p. 279).

Isomorphisms

Concretely, the binary icosahedral group is a subgroup of $\text{Spin}(3)$, and covers the icosahedral group, which is a subgroup of $\text{SO}(3)$. Abstractly, the icosahedral group is isomorphic to the symmetries of the 4-[simplex](#), which is a subgroup of $\text{SO}(4)$, and the binary icosahedral group is isomorphic to the double cover of this in $\text{Spin}(4)$.

Note that the symmetric group S_5 *does* have a 4-dimensional representation (its usual lowest-dimensional irreducible representation as the full symmetries of the $(n-1)$ -simplex), and that the full symmetries of the 4-simplex are thus S_5 , not the full icosahedral group (these are two different groups of order 120).

The binary icosahedral group can be considered as the [double cover of the alternating group](#) A_5 , denoted $2 \cdot A_5 \cong 2I$; this isomorphism covers the isomorphism of the icosahedral group with the alternating group $A_5 \cong I$, and can be thought of as sitting as subgroups of $\text{Spin}(4)$ and $\text{SO}(4)$ (and inside the symmetric group S_5 and either of its double covers $2 \cdot S_5^\pm$, in turn sitting inside either pin group and the orthogonal group $\text{Pin}^\pm(4) \rightarrow \text{O}(4)$).

Unlike the icosahedral group, which is [exceptional](#) to 3 dimensions, these tetrahedral groups and alternating groups (and their double covers) exist in all higher dimensions.

One can show that the binary icosahedral group is isomorphic to the [special linear group](#) $\text{SL}(2,5)$ — the group of all 2×2 matrices over the [finite field](#) \mathbf{F}_5 with unit determinant; this covers the [exceptional isomorphism](#) of $I \cong A_5$ with the [projective special linear group](#) $\text{PSL}(2,5)$.

Note also the exceptional isomorphism $\text{PGL}(2,5) \cong S_5$, which is a different group of order 120, with the commutative square of SL , GL , PSL , PGL being isomorphic to a commutative square of $2 \cdot A_5, 2 \cdot S_5, A_5, S_5$, which are isomorphic to subgroups of the commutative square of $\text{Spin}(4)$, $\text{Pin}(4)$, $\text{SO}(4)$, $\text{O}(4)$.

Presentation

The group $2I$ has a [presentation](#) given by

$$\langle r, s, t \mid r^2 = s^3 = t^5 = rst \rangle$$

or equivalently,

$$\langle s, t \mid (st)^2 = s^3 = t^5 \rangle.$$

Generators with these relations are given by

$$s = \frac{1}{2}(1 + i + j + k) \quad t = \frac{1}{2}(\varphi + \varphi^{-1}i + j).$$

Subgroups

The only proper [normal subgroup](#) of $2I$ is the center $\{ \pm 1 \}$.

By the [third isomorphism theorem](#), there is a [Galois connection](#) between subgroups of $2I$ and subgroups of I , where the [closure operator](#) on subgroups of $2I$ is multiplication by $\{ \pm 1 \}$.

-1 is the only element of order 2, hence it is contained in all subgroups of even order: thus every subgroup of $2I$ is either of odd order or is the preimage of a subgroup of I . Besides the [cyclic groups](#) generated by the various elements (which can have odd order), the only other subgroups of $2I$ (up to conjugation) are:

- [binary dihedral groups](#) of orders 12 and 20 (covering the dihedral groups D_3 and D_5 in I).
- The [quaternion group](#) consisting of the 8 [Lipschitz units](#) forms a subgroup of [index](#) 15, which is also the [dicyclic group](#) Dic_2 ; this covers the stabilizer of an edge.
- The 24 [Hurwitz units](#) form an index 5 subgroup called the [binary tetrahedral group](#); this covers a chiral [tetrahedral group](#). This group is [self-normalizing](#) so its [conjugacy class](#) has 5 members (this gives a map $2I \rightarrow S_5$ whose image is A_5).

Relation to 4-dimensional symmetry groups [[edit](#)]

The 4-dimensional analog of the [icosahedral symmetry group](#) I_h is the symmetry group of the [600-cell](#) (also that of its dual, the [120-cell](#)). Just as the former is the [Coxeter group](#) of type H_3 , the latter is the Coxeter group of type H_4 , also denoted $[3,3,5]$. Its rotational subgroup, denoted $[3,3,5]^+$ is a group of order 7200 living in [SO\(4\)](#). $\text{SO}(4)$ has a [double cover](#) called [Spin\(4\)](#) in much the same way that $\text{Spin}(3)$ is the

double cover of $SO(3)$. Similar to the isomorphism $Spin(3) = Sp(1)$, the group $Spin(4)$ is isomorphic to $Sp(1) \times Sp(1)$.

The pre-image of $[3,3,5]^+$ in $Spin(4)$ (a four-dimensional analogue of $2I$) is precisely the [product group](#) $2I \times 2I$ of order 14400.

The rotational symmetry group of the 600-cell is then

$$[3,3,5]^+ = (2I \times 2I) / \{ \pm 1 \}.$$

Various other 4-dimensional symmetry groups can be constructed from $2I$. For details, see (Conway and Smith, 2003).

Applications

The [coset space](#) $Spin(3) / 2I = S^3 / 2I$ is a [spherical 3-manifold](#) called the [Poincaré homology sphere](#). It is an example of a [homology sphere](#), i.e. a 3-manifold whose [homology groups](#) are identical to those of a [3-sphere](#). The [fundamental group](#) of the Poincaré sphere is isomorphic to the binary icosahedral group, as the Poincaré sphere is the quotient of a 3-sphere by the binary icosahedral group.

E8 and the Qi Men Dun Jia Cosmic Board

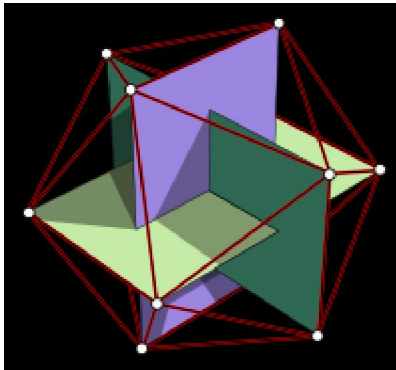
Tony Smith continues in his email:

The Clifford Algebra $Cl(8)$ is closely related to the 248-dim E8 Lie Algebra.

Tony

Golden Section

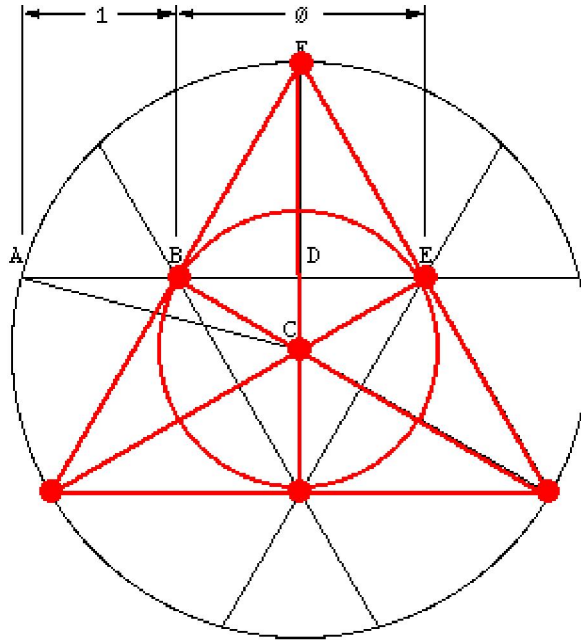
The icosahedra is composed of three Golden Rectangles.



The Golden Rectangles are related to three Fano Planes and the octonions, which are in turn related to the Golden Section.

This provides the basis for the Lie Algebra and lattice of E8, again with its own Golden Section properties.

In future papers we shall reveal the purpose of the Golden Section.



Conclusion

The purpose of this paper is not to create another Theory of Everything based on E8. Instead, the purpose is to demonstrate that the Chinese have been using the Qi Men Dun Jia Cosmic Board for at least two thousand years, in order to accurately predict many aspects of life, from military uses, such as planning battle strategy, to medical divination. In traditional China, there existed as many as thirty or forty kinds of divination by the Qi Men Dun Jia Cosmic Board.

The Chinese would not have kept such a method for two millenia if it proved incapable of making accurate predictions. Indeed, the Ming Dynasty is said to have come to power with the assistance of Liu Bo Wen, who evidently employed the Qi Men Dun Jia Cosmic Board to win major battles for the Ming.

In the wake of the Cultural Revolution, Qi Men Dun Jia was revived in modern China, and spread throughout the global Chinese diaspora. If the Qi Men Dun Jia Cosmic Board proved an inaccurate method of making predictions about the future, then one would not expect to witness its revival around the world today.

This author has used the Qi Men Dun Jia Cosmic Board for many years with many accurate results. In future papers here, he will publish additional case histories which prove the accuracy of Qi Men Dun Jia, even across oceans. While the Qi Men Dun Jia Cosmic Board makes no claims toward representing a Theory of Everything, Qi Men Dun Jia represents a scientific model which is capable of making accurate predictions which can be replicated by other Qi Men Dun Jia analysts.

E8

