Lovecraft's Enochian Watchers

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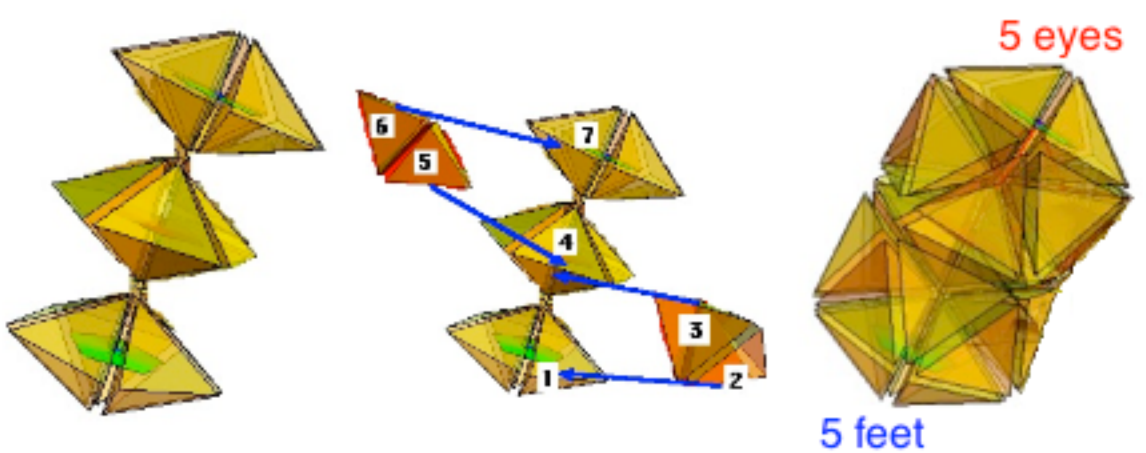
The book 1 Enoch (Ethiopic Enoch) says:
"... two hundred ... angels ... **the Watchers** ... descended ... and bound themselves by mutual curses ... And ... took wives ... and ... taught ... charms and spells ...
Then said ... the Great and Holy One ... "Go to Noah and ... reveal to him that ...
a flood is about to come on the whole earth ..." ...
Then Enoch disappeared and no children of men knew where he was hidden ...".

H. P. Lovecraft, in his 1925-27 essay "Supernatural Horror in Literature", said:
"... upon such things [as]... the earliest folklore ... like the Book of Enoch ...
were based enduring systems and traditions whose echoes extend ... even to the present time ...
operating toward the same end ... were ... the ... Raymond Lully type ...".
In his 1931 story "At the Mountains of Madness", Lovecraft described
"... monstrous barrel-shaped fossil ... reminds one of **certain monsters of primal myth** ...
Six feet end to end, 3.5 feet central diameter ...
Like a barrel with five bulging ridges in place of staves. ...
At top of torso ... five-pointed ... apparent head about 2 feet point to point ... with ... tubes projecting from each point ... At end of each tube is ... an eye ...
At bottom of torso rough ... counterparts of head arrangements exist ... To each point is attached ... a ... paddle, fin, or pseudo-foot ...".

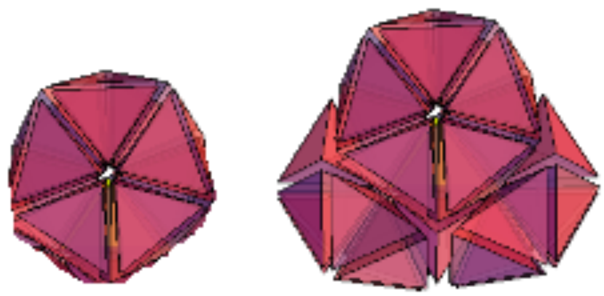
The barrel body described by Lovecraft closely corresponds to natural groupings
of the most basic 3-dimensional polytope, the tetrahedron.
5 tetrahedra form an approximate pentagonal dipyramid

and 3 pentagonal dipyramids form a 15-tetrahedra axis which can be filled with two sets of 10 tetrahedra to form a barrell body of 15+10+10 = 35 tetrahedra

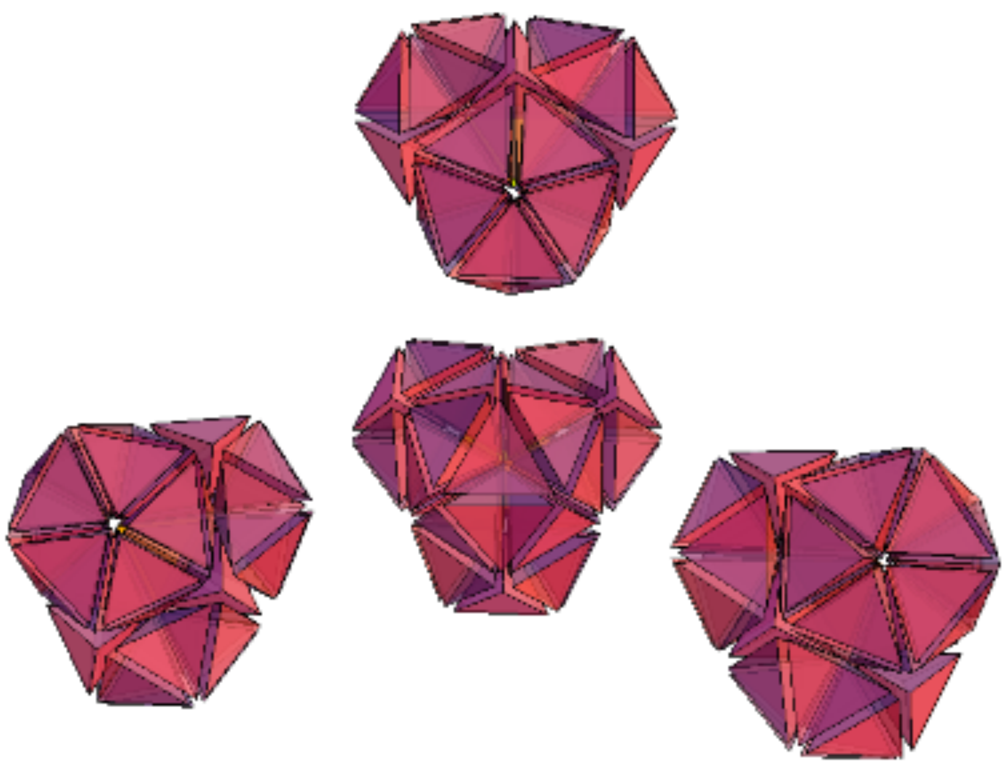


which is effectively 2 icosahedra (each with 20 tetrahedra) interpenetrating sharing 5 tetrahedra of the central axis pentagonal dipyramid.

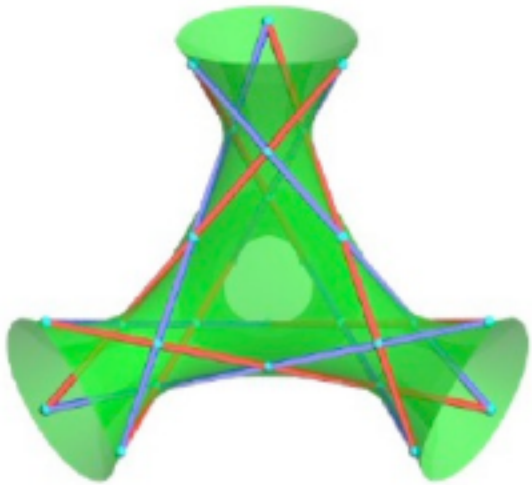
Lovecraft goes on to say in "At the Mountains of Madness":
"... Seven-foot ... wings ... spread out of furrows between ridges ...
Around equator ... are five systems of ... arms or tentacles ... expansible to ... over 3 feet ...
arms ... single stalks ... branch ... into five sub-stalks, each of which branches ... into five ... tentacles ...".
If you view the barrel body from above and add two 5-dipyramids for Lovecraft's wings and one 5-dipyramid for Lovecraft's tentacles and 7 intermediate tetrahedra (but then abandon Lovecraft's idea of wings and tentacles being evenly spaced around the barrel body equator)

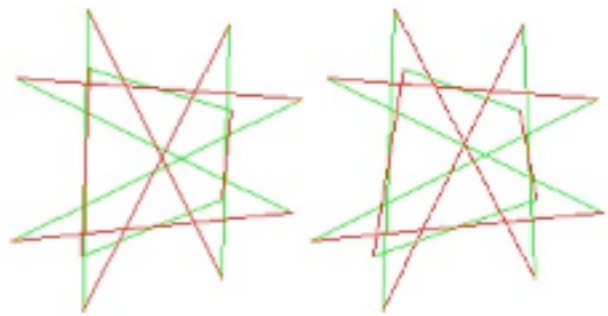


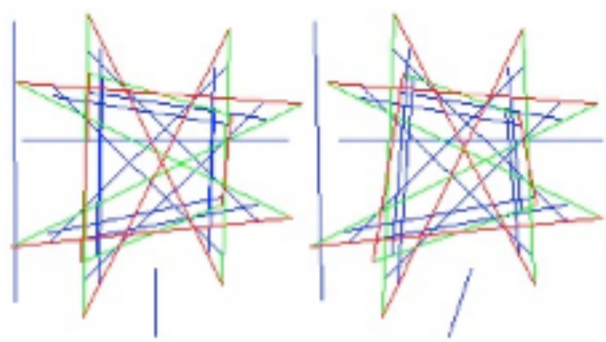
you get a group of 35 + 10 + 5 + 7 = 57 tetrahedra with structure similar to gamma-brass
which is 4 Interpenetrating Icosahedra with one Central Tetrahedron shared by all 4
shown below from 4 points of view (central with one icosahedron on top
and 3 others each showing a different core barrel-group of 35 tetrahedra



Since there are 4 icosahedra that you could see as being at the top of the 57-group, each with 3 related core barrel 35-groups, the 57-group can be seen as a superposition of 4x3 = 12 of the core-barrel 35-groups with the superposition restoring the symmetry of Lovecraft's even spacing around the barrel body equator. Compare the Schlafli Double-6:







The symmetry group of the 27 line configuration is of order 72x6! = 51,840 and is the Weyl Group of the Lie Agebra E6.

D2 = A1 x A1 = S3 x S3

D3 = 15 with spinor 4+4 = A3

D4 = 28 with spinor 8+8

D5 = 45 with spinor 16+16

D6 = 66 with spinor 32+32

D8 = 120 with spinor 128+128

G2 = 14 = A2 + S6

F4 = 28 + 8 + 16

E6 = 78 = 45 + 32 + 1

E7 = 133 = 66 + 64 + 3

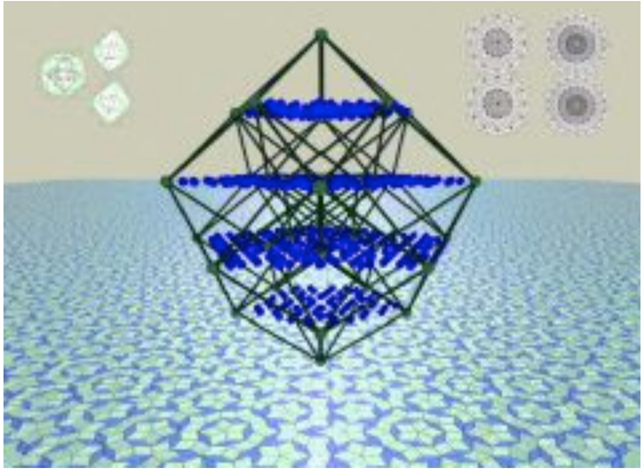
E8 = 248 = 120 + 128

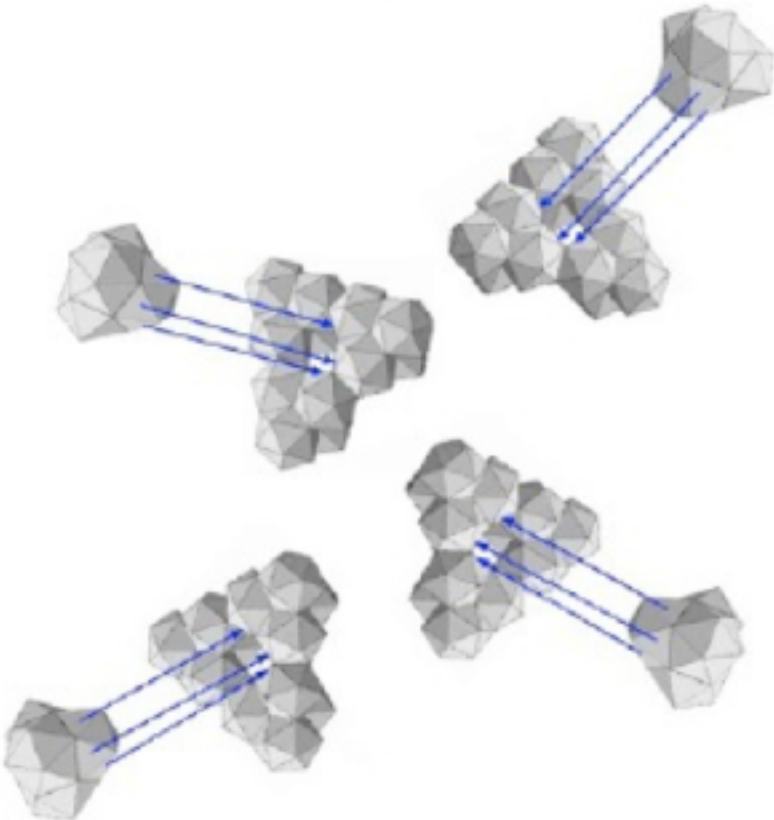
Cl(8) = 2^8 = 256 = 16x16

Cl(16) = C(8) x Cl(8)

Cl(8N) = Cl(8) x ...(N times tensor product)... x Cl(8)

"... the windowless solids with five dimensions ..."





The 240 Polytope with 240 vertices and 600+600 = 1200 cells contains four 57-groups.
The 240 E8 root vectors form the Witting polytope of 8-dim close-packing corresponding to 240 of the 248 generators of E8, with the other 8 forming a Cartan subalgebra of E8.
Then, if you look at the D8 root vectors of so(16) (nearest neighbors to the origin in a D8 lattice with a vertex at the origin) you see that there are 112 of them. They correspond to 112 of the 120 generators of so(16), with the other 8 forming a Cartan subalgebra of so(16).

In their Springer book "Sphere Packings, Lattices, and Groups", Conway and Sloane say (slightly edited): "... The covering radius of Dn increases with n, and when n = 8 it is equal to the minimal distance between the lattice points. So when n = 8 [or greater] we can slide another copy of Dn in between the points of the original Dn ... [the union of the two Dn lattices] is a lattice packing if and only if n is even. ... When n = 8 ... the lattice being known as E8 ...".

Since the first D8 lattice has a vertex at the origin,
the second D8 lattice should have a hole at the origin.

Conway and Sloane also say in that book (slightly edited):
"... Zn is the n-dimensional cubic or integer lattice. ... Zn is self-dual. ...
Dn is obtained by coloring the points of Zn alternately red and white with a checkerboard coloring, and taking the red points. Dn is sometimes called the checkerboard lattice. ...".

A cubic Z8 lattice with a hole at the origin has 2^8 = 256 vertices (the vertices of an 8-dim cube) surrounding the origin hole,
so the second D8 lattice, a checkerboard with half of the vertices of Z8,
has 128 vertices surrounding the origin hole.

Therefore,
the first copy of D8 lattice provides 112 of the 240 E8 root vectors,
and (along with the 8 Cartan generators) corresponds to
the so(16) part of E8 that we understand as (so(8)+) + (so(8)) + ((v8+)x(v8))
and
the second copy of D8 lattice provides the other 240 - 112 = 128 root vectors of E8,
and therefore the 128+ half-spinor generators of E8.

Since the 8-dim close-packing has 112 + 128 = 240 vertices
that are nearest neighbors of the origin,
there is no room for any of the mirror image 128- so(16) half-spinors to be in any E8 lattice.

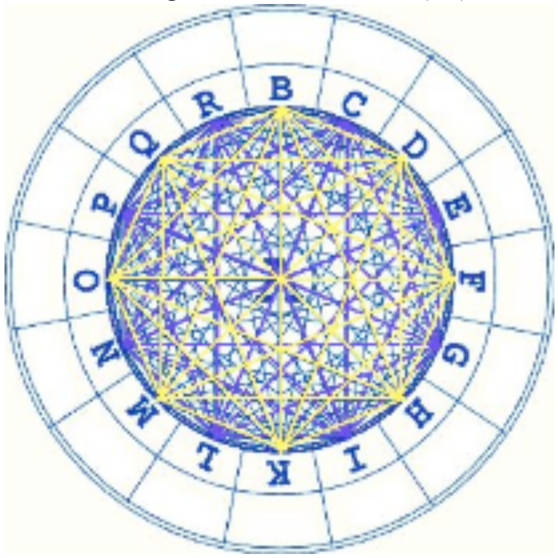
The higher geometry of E8 and Cl(16) = Cl(8)xCl(8)
and the Algebraic Quantum Field Theory (AQFT) of the completion of the union
of all tensor products Cl(8N) = Cl(8) x ...(N times tensor product)... x Cl(8)

is the transcendent structure feared by the 57-group Enochian Watchers of Lovecraft

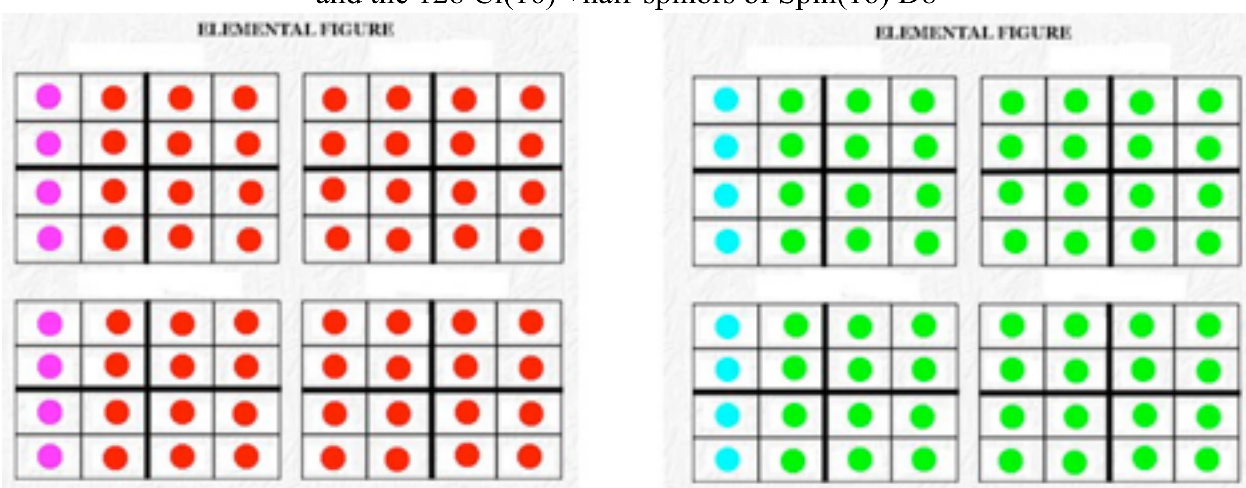
which Lovecraft describes as

"... what lay back of those ... violet westward mountians ... of madness ...".

In his 1925-27 essay, Lovecraft mentioned Ramon Llull who about 700 years ago described the basic structure of the 120 generators of the Cl(16) bivectors Spin(16) D8

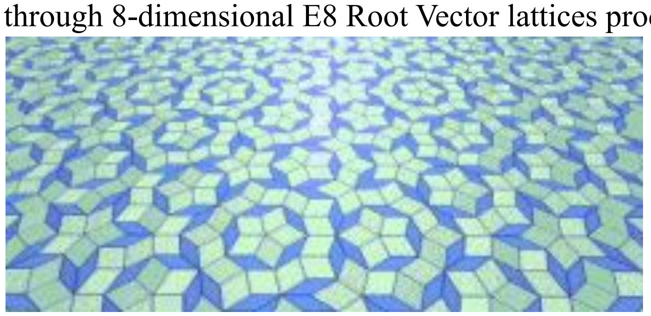


and the 128 Cl(16) +half-spinors of Spin(16) D8



Ramon Llull's 120 generators of the Cl(16) bivectors Spin(16) D8
plus 128 Cl(16) +half-spinors of Spin(16) D8
combine to form 248-dimensional E8 with 240 Root Vectors.

2-dim and 3-dim slices through 8-dimensional E8 Root Vector lattices produce



pentagonal-themed Aperiodic QuasiCrystal Tilings reminescent of Lovecraft's description of the cities "At the Mountains of Madness" built by the barrel-bodied Watchers:

"... five-pointed or five-ridged arrangements of mad grotesqueness ...".

To understand E8 lattice structure, consider this E8 lattice:

```
          ±1,  ±i,  ±j,  ±k,  ±e,  ±ie,  ±je,  ±ke,
     (±1 ±ke ±e  ±k)/2                 (±i  ±j  ±ie  ±je)/2
     (±1 ±je ±j  ±e)/2                 (±ie ±ke ±k   ±i)/2
     (±1 ±e  ±ie ±i)/2                 (±ke ±k  ±je  ±j)/2

     (±1 ±ie ±je ±ke)/2             (±e  ±i  ±j  ±k)/2
     (±1 ±k  ±i  ±je)/2                (±j  ±ie ±ke ±e)/2
     (±1 ±i  ±ke ±j)/2                 (±k  ±je ±e  ±ie)/2
     (±1 ±j  ±k  ±ie)/2                (±je ±e  ±i  ±ke)/2
```

The 112 vertices

```
          ±1,  ±i,  ±j,  ±k,  ±e,  ±ie,  ±je,  ±ke,
     (±1 ±ke ±e  ±k)/2                 (±i  ±j  ±ie  ±je)/2
     (±1 ±je ±j  ±e)/2                 (±ie ±ke ±k   ±i)/2
     (±1 ±e  ±ie ±i)/2                 (±ke ±k  ±je  ±j)/2
```

correspond to the first D8 that has the 112 root vectors of 120-dim so(16)
(Note that the 4-component ones each of them has 2 componets with an e factor.)

and the 128 vertices

```
     (±1 ±ie ±je ±ke)/2             (±e  ±i  ±j  ±k)/2
     (±1 ±k  ±i  ±je)/2                (±j  ±ie ±ke ±e)/2
     (±1 ±i  ±ke ±j)/2                 (±k  ±je ±e  ±ie)/2
     (±1 ±j  ±k  ±ie)/2                (±je ±e  ±i  ±ke)/2
```

correspond to the second D8 that has the 128 +half-spinors of so(16).
Note that they are all 4-component and each of them has either 1 or 3 componets with an e factor.

There are 7 independent E8 lattices,
all of which have the same general two D8 structure described above.
Taking all 7 E8 lattices together, there are 16 + 14x16 = 16 + 224 = 240 vertices that appear in the first type of D8 lattice representing so(16) with 224 of those vertices being 4-component
and
there are 7x8x16 = 896 that appear in the second type of D8 lattice representing half-spinors of so(16) with all 896 of those vertices being 4-component.
Since there are (8 choose 4) = 8x7x6x5 / 1x2x3x4 = 70 sets of 4 components and 2^4 = 16 sets of signs, there are 70 x 16 = 1,120 possible 4-component vertices.
Since 1,120 = 224 + 896 the 7 E8 lattices taken together
contain all possible 4-component vertices,
and each of them contains all of the 16 1-component vertices.

None of the 7 E8 lattices contain any half-spinor vertices in common with any other E8 lattice.

Each of the 14x16 = 224 4-component so(16) vertices
of the first D8 lattice appears in 3 of the E8 lattices:
2x16 = 32 appear in 1E8, 2E8, and 4E8
2x16 = 32 appear in 1E8, 3E8, and 7E8
2x16 = 32 appear in 1E8, 5E8, and 6E8
2x16 = 32 appear in 2E8, 3E8, and 5E8
2x16 = 32 appear in 2E8, 6E8, and 7E8
2x16 = 32 appear in 3E8, 4E8, and 6E8
2x16 = 32 appear in 4E8, 5E8, and 7E8

The unit vertices in the E8 lattices do not include any of the 256 E8 light cone vertices, of the form (±1±i±j±k±e±ie±je±ke)/2.

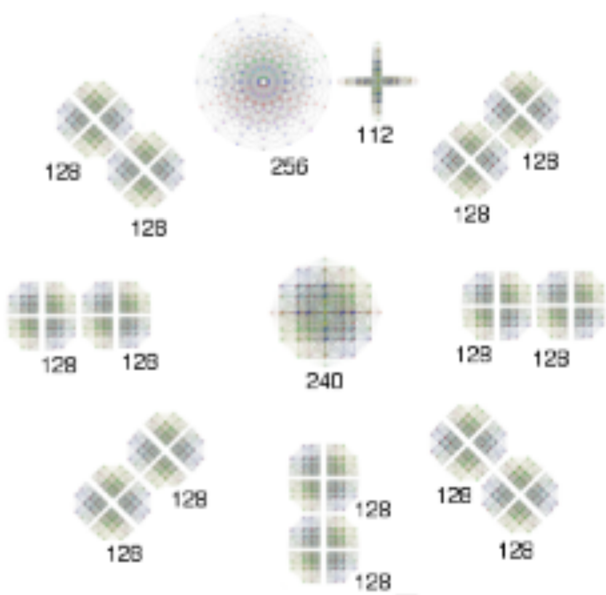
They appear in the next layer out from the origin, at radius sqrt 2,
which layer contains in all 2160 vertices.

2160 = 112 + 256 + 1792 = 112 + (128+128) + 7(128+128)

the 112 = root vectors of D8

the (128+128) = 256 = 8-cube = two mirror image D8 half-spinors related by triality to the 112

the 7(128+128) = 7 copies of 8-cube for 7 independent E8 lattices,
each 8-cube = two mirror image D8 half-spinors related by triality
to the 112 and thus to the (128+128) and thus to each other.



248 E8 = 120 Cl(16) bivector + 128 Cl(16) half-spinor
Cl(16) = C(8) x Cl(8)
Cl(8) = 2^8 = 256 = 16x16
Cl(8N) = Cl(8) x ...(N times tensor product)... x Cl(8)