

# Looking Up: A Proposal for a Temple Structure

Gregg Fleishman

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We appreciate the opportunity to submit this temple design.

We also assume here that a proposal for the Temple structure includes the implicit participation of a number of Burning Man regular volunteers and staff who have been part of the event before. And, that cost estimates and engineering are preliminary and will be supplemented by that of the same.

Please examine this proposal in that light.

Additional team members:

Alex Conn  
Bernard Mendiburu  
Darius  
Fabienne  
Genevieve Sprinkles  
Igor Lesik  
Jake Dotson  
Masha Vasilkovsky  
Nana Tchitchoua  
Roc Fleishman  
Ryan Green  
Tom Carlile  
Wade Ivy

*In this document*

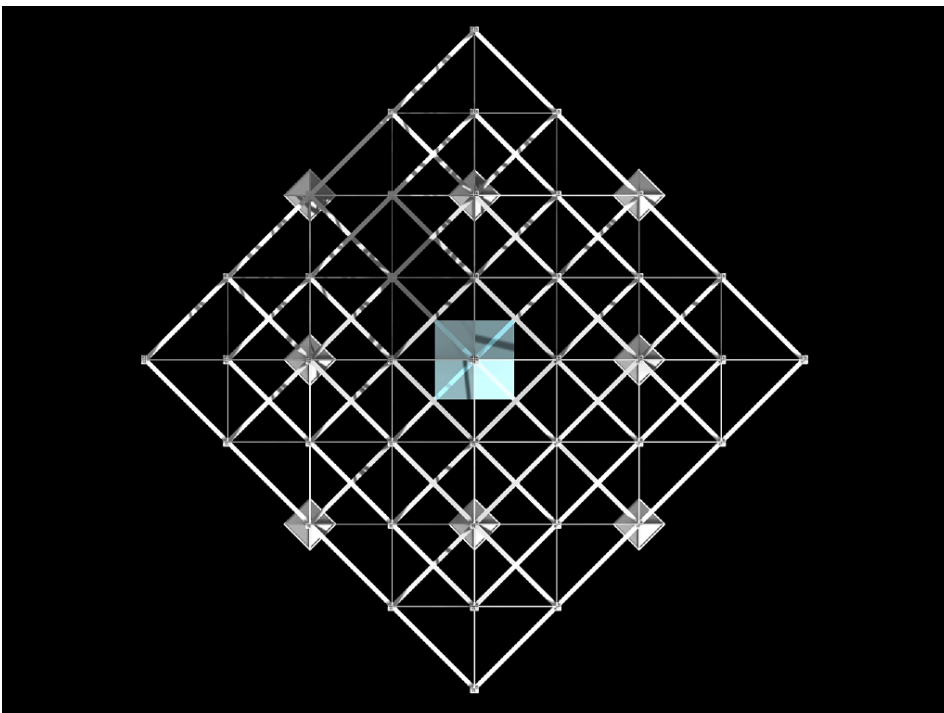
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Images

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Cost estimate



## Philosophical Statement

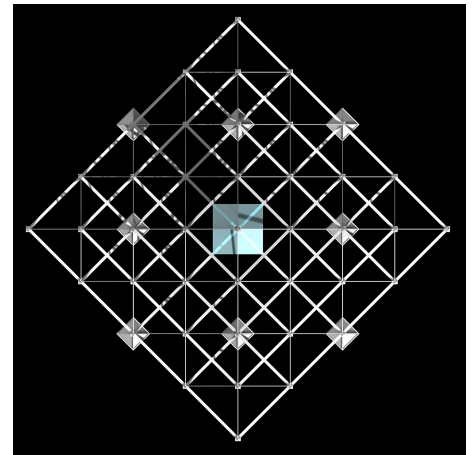
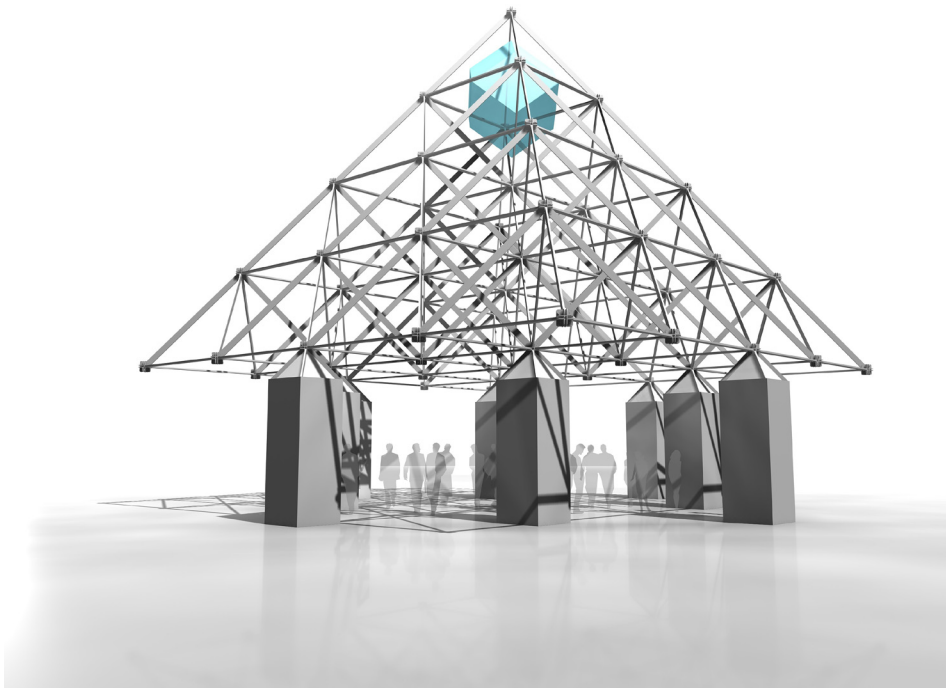
I am pleased to be called an artist, and in that spirit hope that my contribution here is appreciated and used off the play as well as on. In structure, I seldom deal in decoration other than in the rhythmic nature of modularity and hope that the art is recognized for what it is. My purpose seems to be figuring out how to make building easier. I have been doing experiments to this end for many years and am just reaching the end of a very long road. Along the way at the casual request of a friend at the time (1980 or so) I developed a solution to an octet truss space frame node.

The octahedral-tetrahedral packing is one of the more basic and most common of the three-dimensional structural arrays. It is generally used as a layer made up the top half and bottom half of horizontally sliced octahedrons with tetrahedrons in between. It usually provides a framework for large roof structures.

If allowed to grow vertically, the outer faces are large equilateral triangles made up of the smaller (strut length) equilateral triangles. This forms a pyramidal structure of immense stability which can be used in many ways. In this case we use it to support the eye of the Illuminati, represented by the diamond faced Rhombicube suspended from the top. If the pyramid represents the best of the past in structures, the Rhombicube represents the best of the future.

The relationship of the all seeing eye on the back of a dollar bill is directly obvious to the theme of Burning Man this year, what closer approximation to the American Dream could there be? "The official interpretation of the image is that the pyramid represents strength and durability. It's incomplete because so is the work of building the nation. The eye in the triangle is the all-seeing eye of providence".

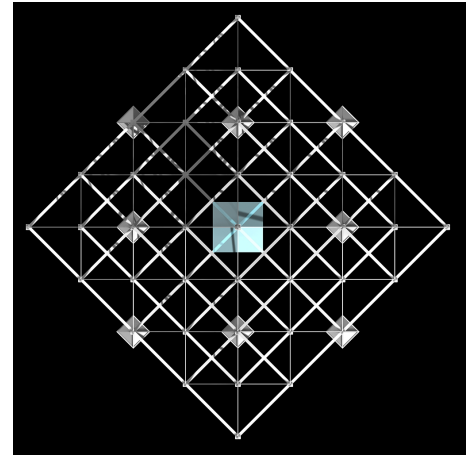
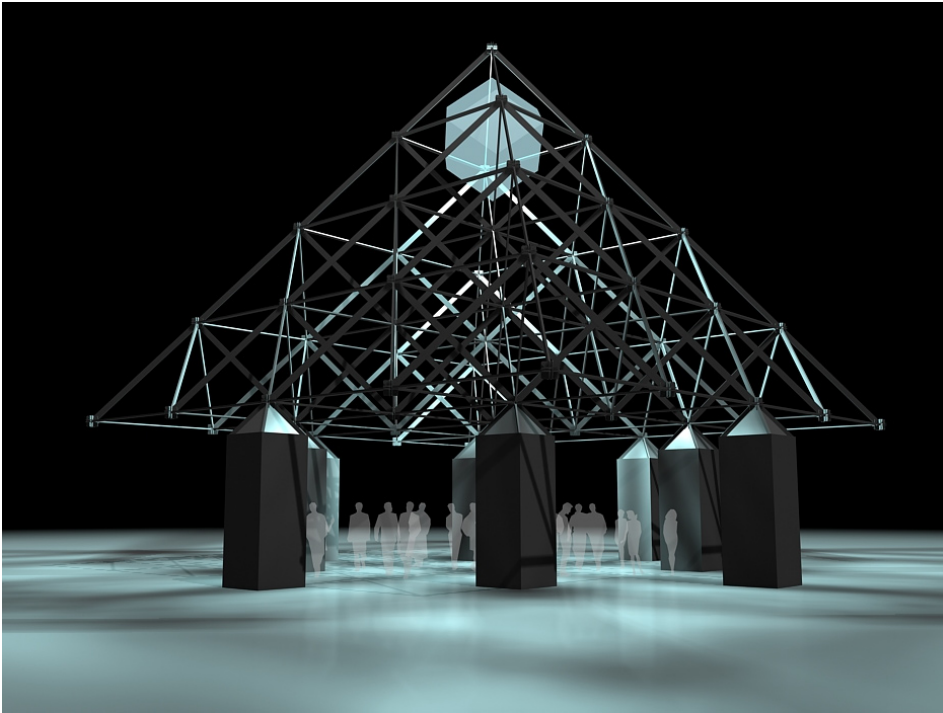
*Gregg Alkshman*



**“I have helped to build temples around the world. There are a few wonderful common denominators: the people were welcoming and kind; and the sound inside was—from the calmest Tibetan Gumpa, to the noisiest Hindu shrine, and from the smallest tomb to the Taj—always the same. Temples are very large flutes played by the wind.”**

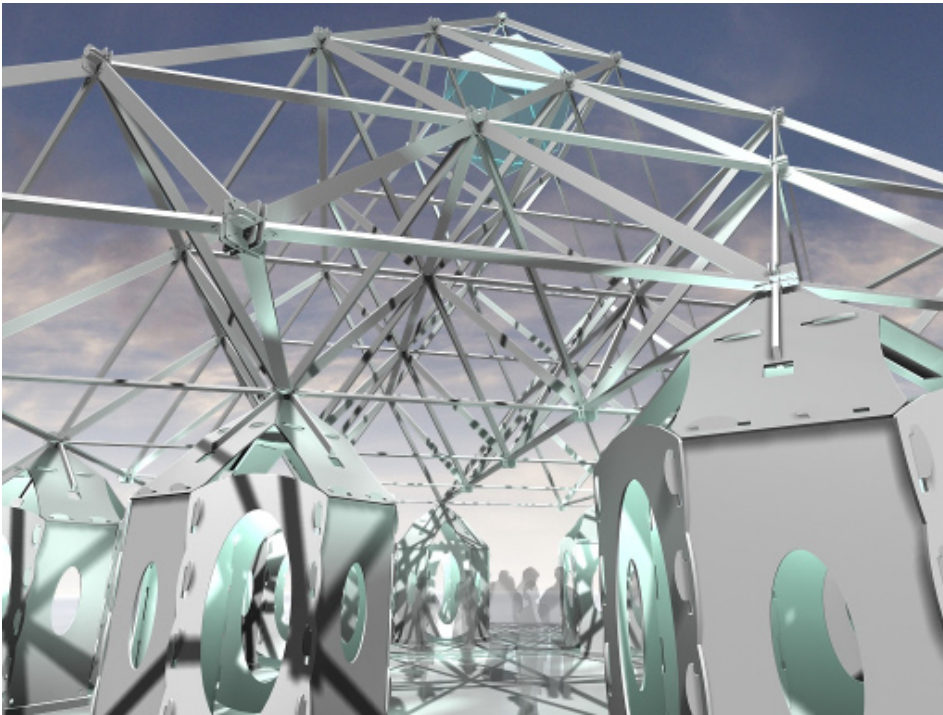
*Alex Conn*

# Images



“I strive to bridge science and metaphysics through art, engineering and design”

*Igor Lesik*



## Team Bios

### Alex Conn

Alex Conn went to the school founded by Gregg Fleishman's mother - to whom he owes his curiosity. He did not complete high school. His schooling beyond that included reading Bucky Fuller, living in Michele Kan's driveway, working for John Lilly and anyone else that seemed to be on to something. He has studied physics and medicine but focused on the limitations of languages and applications of technology on economic development at the post graduate level in Japan, Hong Kong and India.

### Bernard Mendiburu

visual effects artist in stereoscopic cinema, working for UCLA, Fox, Disney.

### *Events experience*

Events organizers and logisticians in the French Live Action Role Playing scene; Events staged 100+ participants, up to 72 hours non-stop games, in wilderness or remote historical sites; Fabienne was lead writer of the "Compagnie Vituelle", leading non-profit LARP group; Bernard was founding chairman of the French LARP national association.

### *Burning Spirit*

Burners every year since we moved from Europe to the US in 2003; We have two kids, aged 2 and 7, both were present in 2006/2007; 2003, part of the "magic gypsy" camp; 2004, no camp participation; 2005, part of "playa portrait" with "Solo" and "Bear". Digital 3D pictures projection; 2006, part of "The muse's Arc" in Kids Ville. Digital 3D movie production; 2007, simple camp in kids ville.

Bernard is amateur fire breather and spinner.

### Fabienne Cazalis,

neurobiology researcher at UCLA

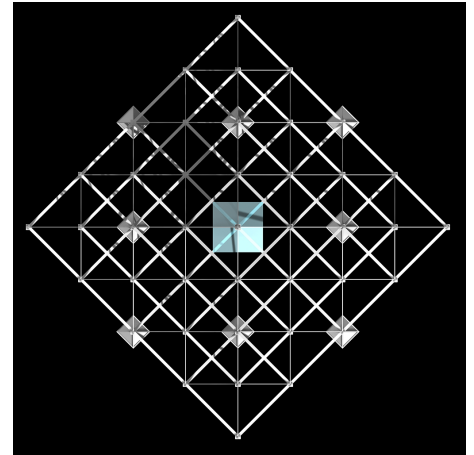
Cognitive Science researcher, a french book publisher, and a peaceful parenting and ecology activist.

### Igor Lesik

With a formal education in Physics Igor Lesik is a researcher in the frontier between science and metaphysics. Igor has managed and coordinated a number of art and engineering projects.

### Nana Tchitchoua

Cal Arts graduate visual artist, Nana Tchitchoua explores ideas about public, private and free spaces, experimentation, and living in the most fulfilling way. Other 'Zones' I and II or The Kindergarten for All Ages is the most recent intervention of collaboration between Gregg Fleishman and Nana Tchitchoua in which they translate their collaborative fusion into an exhibition of social/architectural experiment centered around interactive puzzle paintings, 3-dimensional scale models, a full size cube (shelter system), a play structure, labyrinth and wonderland paintings. The sort of questions raised by the cross-fertilization of archi-art seeks to circumnavigate the boundaries of space and time by the creation of interdisciplinary objects that are modular, portable and transformative in their nature. The space is a fantastic environment of harmony, playfulness and thoughtful investigation into the future in a call for radical reconstruction, ensuring that discovery and wonder remain central upon repeated viewings.



**“To find the link between artist and scientist one must be a little mad.”**

*Tom Carlile*

## Team Bios

At present she produces work in her Culver City studio as well as being the Tula Tea Room Liaison at the Museum of Jurassic Technology.

### Ryan Green

Systems Analyst/Programmer

Burning Flipside, Austin Artistic Reconstruction - LLC 2004-2006: Glitter Monkey Rodeo, Inner-Galactic Circus, Fall from Grace [www.burningflipside.com](http://www.burningflipside.com) (flipside is the largest regional burn at ~2,000 people): Planned, coordinated and took financial liability for our event; Oversight, Coordination, Budget Administration of Effigy burns; Helped design, fund and implement Flipside "Merkaba Temples".

Flipside 2007 "Symphony of Construction", Head (AF) of City Planning : Coordinated (with LLC, Site Ops, Safety, et. al) in the design, implementation, and running of the city (3rd Largest in Blanco County, TX).

Burning Man 2005 Art: worked in Charlie Smith's regional collaborative large scale fire sculpture workshops (Synapse). Ten person workshops in 6 different cities fabricated 15 foot steel fire caldrons. I was part of the Austin Team who also went to BM to burn the sculpture for 5 nights.

BS in Computer Science, Minor in Fine Art, University of New Mexico (Albuquerque, NM)

Employers: IBM, UT Austin Research Labs, Deja.com (became Google groups), Cobalt Group, Austin Public Library

### Tom Carlile

*Project Related Skills*

laser show design - we can use mirrors to avoid burning lasers ; laser drills using standard hand drills pointed into the sky + mirrors + smoke; amateur holography using reflection and transmission holograms; experience with 532nm laser optics and interference patterns; simulation programming experience; aware of laser safety; amateur artist / 3D artist / mad scientist

*Burning Man*

2007

Camped with KC Freaks Beyond Boundaries and Psychedelic Warriors 8:45 & H; Setup mini dome with laser & LED light show; Learned a lot from the Big Burn

*Burning Flipside*

2008

Plan to camp with Ish and spin glitch/breaks sets at Ish and Smash and other theme camps; Volunteering at Ice camp, assisting with art car, etc

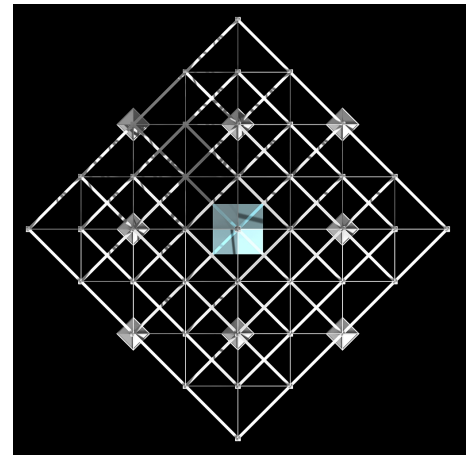
2007

Introduced new people and did not have official camp, ended up at Winners Circle

Flipside Decomp - QuesuperWow camp

2006

Looking Up Proposal



**“Life, knowledge, art & science. I explore ideas about public, private and free spaces, experimentation, and living in the most fulfilling way.”**

*Nana Tchitchoua*

## Team Bios

Started a new theme camp with around 20 friends called Special Ops camp; complete with sound system with DJ and live guitar/drums with swamp air cooler, chillout tent, full bar, raised carpet dancefloor and good vibe

### *Flipside Decomp - Ambient campouts*

Fugu trance campouts, Enchanted forest costume parties, and local warehouse parties; Produce electronic break beats with Ableton Live and mix live mp3s with Rane Serato

### *Work*

6+ years of experience running online game services for EA and other Austin game studios; 10+ years of linux sysadmin and networking; web development, perl scripting, automation, storage virtualization

### **Wade Ivy**

An artist/filmmaker based in Culver City, CA. His idiosyncratic work explores fringe themes and mysterious events, deep history and visionary aesthetics with the intent to show the way to the future. Nana Tchitchoua is his muse, wife, and frequent collaborator. As a visual effects artist, Wade has contributed to over 30 feature films. He is a graduate of California Institute of the Arts.

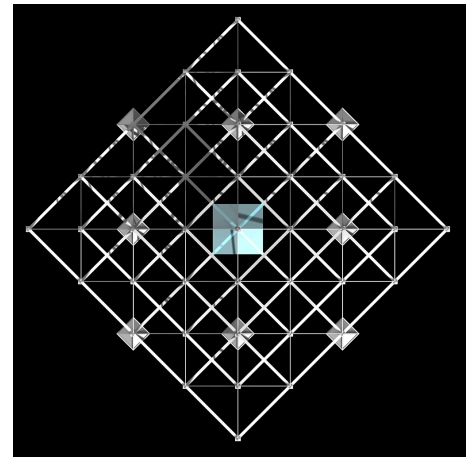
### **Genevieve Sprinkle**

Genevieve Sprinkle is a ritualist, healer, priestess and creatrix of temples. Genevieve has over ten years of experience creating and performing personal as well as large community rituals. Her BA in Cultural Anthropology and MS in Oriental Medicine provide a strong base for her continuing study of cross cultural and ancestral spiritual practice. She is currently exploring the link between the cycles of our lives and those of the natural world.

Genevieve led the creation of Merkaba Temple the last three years for Burning Flipside, the largest regional burn near Austin, Texas. Merkaba Temple started as a 30 ft star tetrahedral spaceship that was used for healing rituals by the Flipside community. We used 3/4 " electrical conduit for our frame and white recycled hospital sheets sewn into large triangular panels for the walls. Merkaba Temple morphed into 15 and 10 ft "tetra teepees" and one glowing 5 ft tetra-lantern the next year. Last year it returned in a smaller 15 ft star tetrahedron version as a Temple of Desire. This year Merkaba Temple will go mobile as TOOL, (Traveling Oracle of Love) for the burn event.

Genevieve also coordinates a Goddess Festival for 150 - 200 women and girls which takes place annually in the Texas Hill Country. She led the creation of temple for this event in 2002.

Genevieve Sprinkle practices acupuncture in Austin, Texas. When she is not sticking people she is creating meaningful rites of passage ceremonies for all kinds of people and has currently performed at least 26 weddings!



**“The sort of questions raised by the cross-fertilization of archi-art seeks to circumnavigate the boundaries of space and time by the creation of interdisciplinary objects that are modular, portable and transformative in their nature.”**

*Nana Tchitchoua*

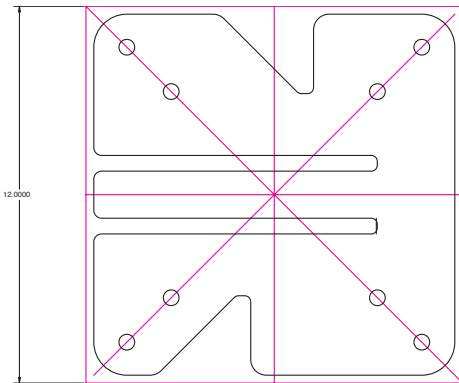
## Physical Description

Because it is modular, the structure can be as big or as small as various factors (in this case cost primarily) dictate. The structure is shown on two different types of support columns. A simple tower and small meditation huts. Other support conditions are possible, including no support (placing the nodes right on the ground), or lower height elements such as benches, etc. The Cost Estimate includes estimates for two different sizes, a four module and a seven module. The four module is priced with the square column supports, the seven module is figured with the meditation hut supports. This document only includes structure images showing it as a four module.

With a strut length of 12 feet, the smaller structure is 48 feet wide and 34 feet tall, and the larger one is 84 feet wide and 56 feet tall. The supported version is shown on 13 foot tall 4 foot square piers and 12 foot tall 8'-6" wide huts. The nodes are shown as 12 inch cubes (material for 16 inch cubes is included in the estimate).

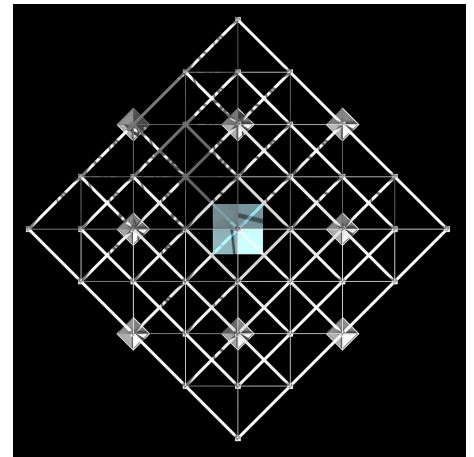
Overall, the smaller structure, as shown, with columns, is 52 feet square and 48 feet tall and includes 55 nodes, 80 horiz. struts and 120 diagonal struts. The larger (in the estimate only) is about 92 feet square (widths include the hut and support column dimensions) and 68 feet tall.

The nodes are each made up of six identical 12 inch square, 1/2 inch thick, router cut plates of sustainable "Finland Birch Plywood" describing generally an exterior grade of solid birch plywood from the Baltic regions of northern Europe, it is grown and harvested in a sustainable manner with full Forest Sustainability Council certification. This birch is rated with the following allowable stress (psi): Extreme Fiber Stress in Bending 3,600. Compression in Plane of Panel 2,500. Rolling Shear Stress 100. Modulus of Elasticity 2,200,000. The minimum cross-section of solid bracket plate defines a node strength of roughly 3000 lbs.



The node's six brackets are aligned two each in three mutually perpendicular planes. They can connect to as many as 12 struts at one time, depending upon their location within the structure. The connections for a regular assembly (shown) occur at 45 degrees to the orthogonal axis. Assembly is simple and takes just minutes per node. Images above of assembled node and bracket drawing.

More problematic is the strut design, where the length suggests a stiffness issue in compression and the materials, if construction douglas fir, a connection issue in tension. Two 2 x 8's are intended to be attached in wide flange, "T" or crossing configurations with glue and nails or similar with trimmed and drilled ends. Other means are possible.



**"It is time to let loose and love"**

*Ryan Green*

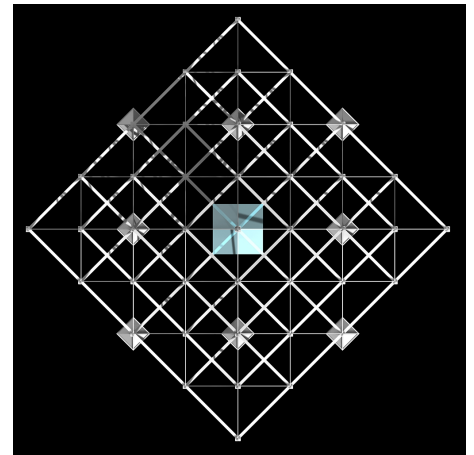
## Physical Description

So what forces does this structure have to contend with? (Note that these are very preliminary calculations) Assuming wind to be of primary importance I have looked at the structure as being somewhere between having unenclosed floors and an open frame tower. The open frame results in the highest load factors, in this region resulting in wind loads of approximately 72 lbs. per square foot of exposed structure. The factor reduces by a three quarters if the structure has wall surface components, so I have assumed that the addition of minimal amounts of such will result in insignificant additional loads.

The exposed structural elements on one face of the structure consist primarily of 328 lineal feet of strut totalling 204 square feet of surface area (assuming 7.5 inch strut cross-section in both horiz. and diagonal orientations). This area results in a horizontal wind load total of approx. 14,700 lbs. Each support column (at a lower load factor of 14 lbs.) contributes an additional 556 lbs. these horiz. loads is a total primarily of the weight of the struts and nodes plus whatever else is placed within. Assuming 200 double 12 foot long 2 x 8 struts at 56 lbs. each and 55 nodes at 11.25 lbs. we have a total dead load of 11,800 lbs. Adding an additional 5000 lbs of ornamentation we have a total of 16,800 lbs. or about 2100 lbs. per column.

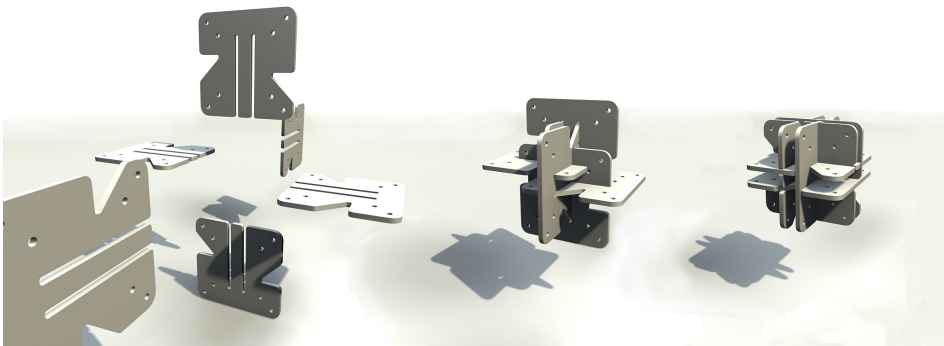
The mean height of the horiz. loads is at 21.5 feet resulting in overturning moment of 301,000 lbs. The resisting dead load moment is 403,000. Note that it is only the addition of the 5000 lbs. of ornamentation the allows the dead load moment to exceed the wind induced overturning moment.

Checking each column for the wind load we find another story. With forces of 1,837 lbs. and 2,100 lbs. at the top horizontally and vertically respectively, it appears that each corner of the support column will need a hold down anchor to the ground of about 2000 lbs. This is not out of the question as a standard \$15 tie down seems to hold about 3,500 lbs.

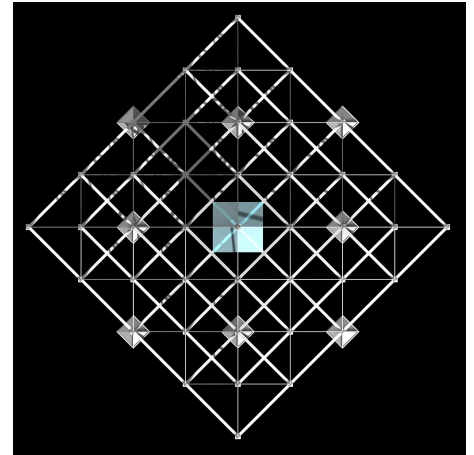
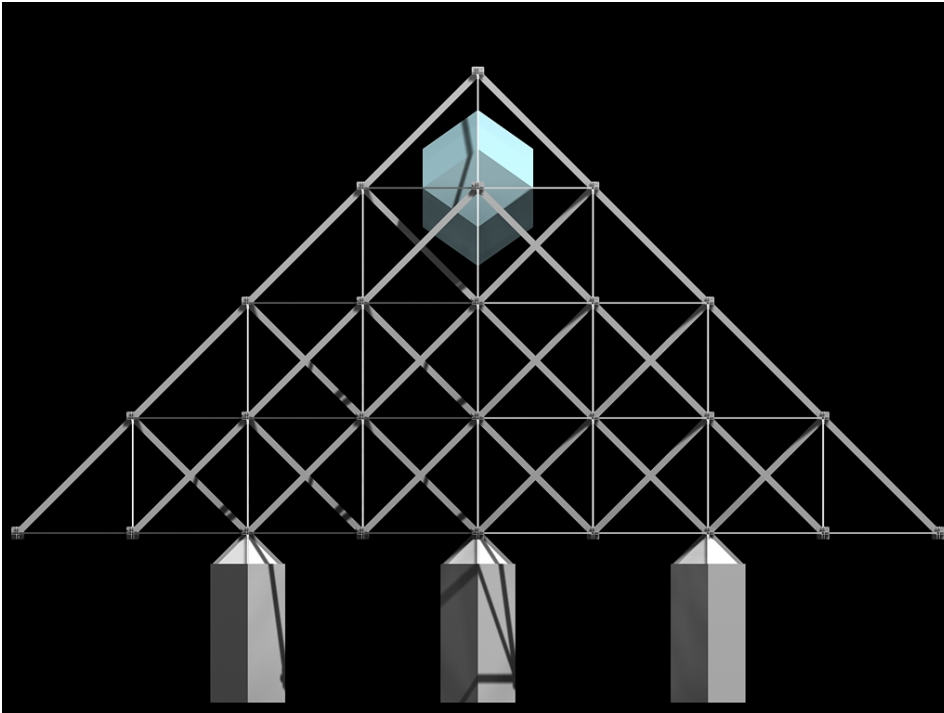


**“Art is a tool to explore fringe themes and mysterious events, deep history and visionary aesthetics with the intent to show the way to the future.”**

*Wade Ivy*

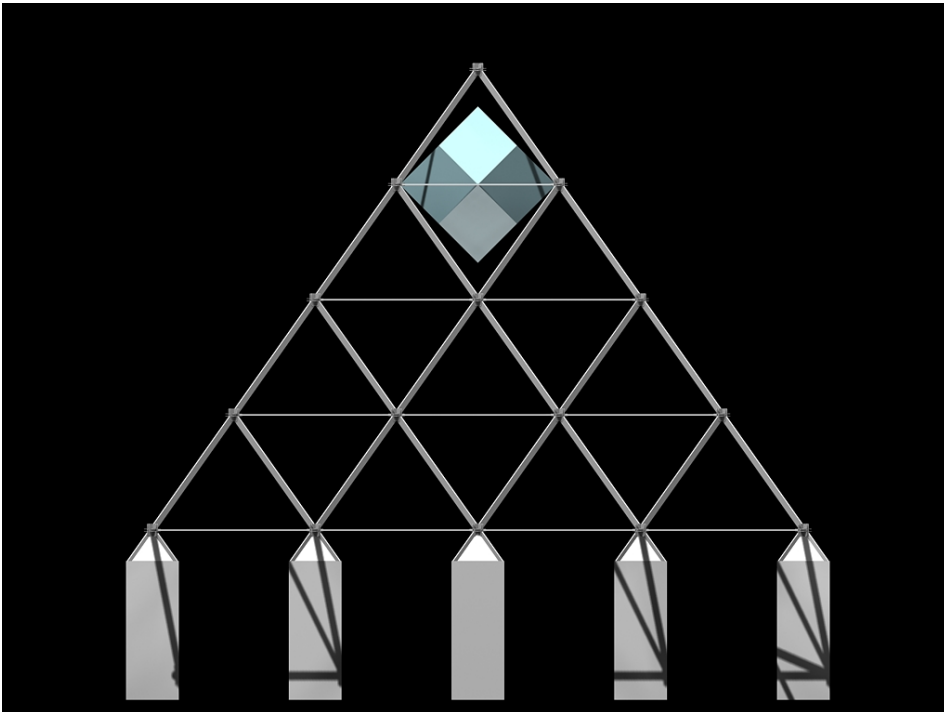


## Physical Description



“Design creates the space for  
freedom of expression”

*Ryan Green*



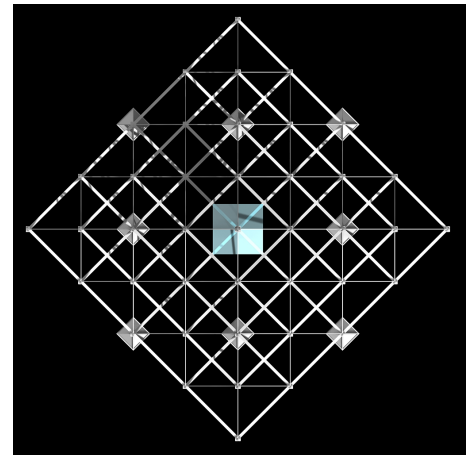
## Cost Estimates

### Proposal 1

Struts (400 2 x 8's 12' long @ \$8 )	\$3,200.00
Node material (18 sheets 1/2" birch @ \$57 )	\$1,026.00
Node CNC work (18 sheets cut & trim @ \$100)	\$4,000.00
Support Columns (40 sheets 3/4" birch @ \$74)	\$2,960.00
Column CNC work (40 sheets cut & trim @ \$50)	\$2,000.00
Tie down anchors (4 x 32 @ \$15)	\$480.00
strut to node (4 x 400 @ \$1)	\$1,600.00
Column to node (4 x 64 @ \$2)	\$252.00
The "eye" materials (12 sheets of acrylic @ \$100)	\$1,200.00
The "eye" fabrication (12 sheets @ \$100)	\$1,200.00
Transportation	\$1,100.00
Shade and decoration material	\$2,860.00
Lighting - Eye power generation	\$6,000.00
Strut fabrication (by hand)	\$-
slippage at 10%	\$2787.80
Sub Total	\$27,878.00
<b>Total</b>	<b>\$30,665.80</b>

### Proposal 2

Struts (1528 2 x 8's 12' long @ \$8)	\$12,224.00
Node material (68 sheets 1/2" birch @ \$57)	\$3,876.00
Node CNC work (68 sheets cut & trim @ \$100)	\$6,800.00
Support Columns (208 sheets 3/4" birch @ \$74)	\$15,392.00
Column CNC work (208 sheets cut & trim @ \$50)	\$10,400.00
Tie down anchors (4 x 32 @ \$15)	\$480.00
strut to node (4 x 400 @ \$1)	\$1,600.00
Column to node (4 x 64 @ \$2)	\$252.00
The "eye" materials (12 sheets of acrylic @ \$100)	\$1,200.00
The "eye" fabrication (12 sheets @ \$100)	\$1,200.00
Transportation	\$4,000.00
Shade and decoration material (4 x 2,860)	\$11,440.00
Lighting - Eye power generation	\$6,000.00
Strut fabrication (by hand)	\$-
slippage at 10%	\$7486.40
Sub Total	\$74,864.00
<b>Total</b>	<b>\$82,350.40</b>



“Looking up into the geometries of the pyramid above and beyond into the night sky, the temple can provide a place of wonder and connection to each other, to the universe beyond and to the spirit of the Playa and the experience of Burning Man.”

*Genevieve Sprinkle*

## Cost Estimates

### Timeline

- Jun 1 Begin material acquisition, location and purchase of recycled/salvaged lumber for strut construction.
- Jul 1 Begin strut fabrication. (assume two people 30 min. ea. for 200 struts = 100 hours x4).  
Arrange for purchase of birch plywood and CNC fabrication of nodes and column parts. CNC work takes relatively no time, but sometimes a job must wait in line.
- Aug 1 Transport materials to Burning Man site. Assume two weeks for work on playa.

We think it is possible with our team to accomplish the smaller proposal without too much help from others (except for help with lifting and burn protection and pyrotechnics which we don't address), but the larger proposal, or multiple structures would certainly be out of our range. To do this, the structure(s) would need to be on site much earlier with a much larger group of participants. More time would certainly be required on site for something like a "vine like array of a trellis network creating rivers of flames winding up the struts to the top."

