

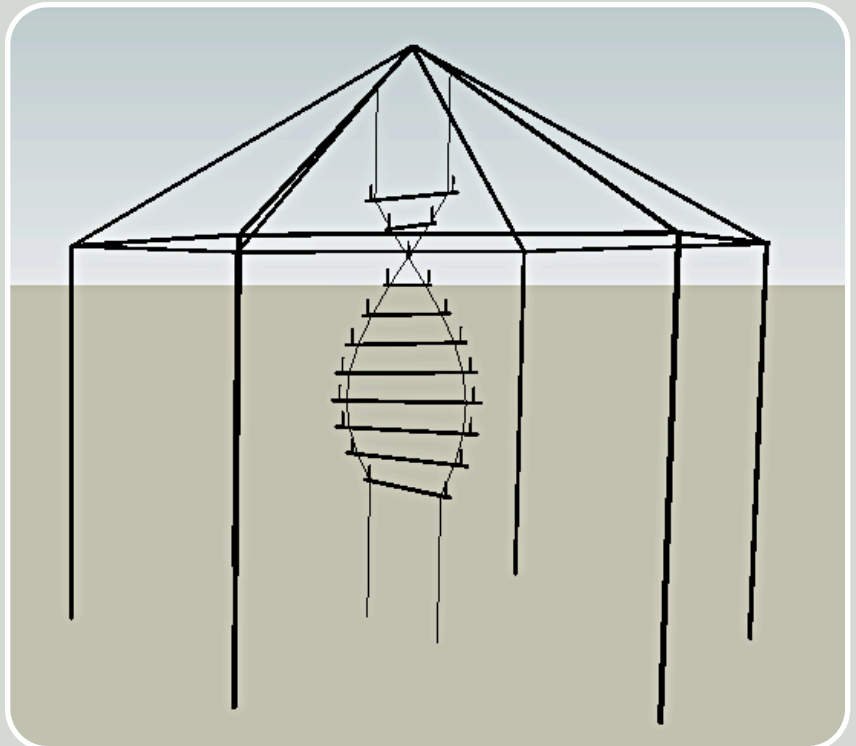
PYROCARDIUM

by  **False Profit**
Laboratories

**A beating heart
depicted in flame**

*Our vision is
interactive fire on a
human scale. Fire you
experience first-hand.*

PyroCardium is an interactive fire sculpture that amplifies and illuminates a person's actual heartbeat by computer-controlled ignition of a series of flames arranged along a metal sculpture of a double helix. The helix itself is a 10-foot-tall arrangement of aluminum rods, suspended by steel cables. It hangs in the center of a pavilion designed both to highlight the sculpture and to create a contemplative space around it. Propane flame effects are mounted at the ends of each rod that comprises the helix's center structure. These flame effects respond to a person's heartbeat when a stethoscope is placed on the participant's chest.



3D Model of PyroCardium pavilion and flame helix.

Project Data:

Artist names: Kurt Thorn, Brett Levine, Chris Linder, Dyche Mullins, Jason Siegler, Brendan Colloran, Zachary Warnow, Ethan Garner, Aaron Hall
Address: 418A Fair Oaks, San Francisco CA 94110
Email: kurt.thorn@gmail.com
Title of Artwork: PyroCardium



Flame pipes respond to voice input from a microphone.

Philosophical Statement

The double helix which forms the heart of PyroCardium echoes the shape of DNA. Though DNA carries all the genetic information necessary to give rise to dynamic, living, breathing, dancing creatures, it is static, like a blueprint. The steel structure that supports our sculpture is strong and still, hardened against elements of the desert that would otherwise crumple it, yet it supports fleeting fire pulses that display the soft and rhythmic human heartbeat.

Just as DNA for human beings and steel for fire, the presence of PyroCardium in our desert city will give rise to new behaviors of dancing, shouting, laughing, incredulous exclamations, a cozy couple sitting beneath the sculpture taking in its light and warmth, friends dragging friends to come try it out, and many scenarios that can't be guessed.

Fire is elemental and connects us with the natural world. Fire may be harnessed as a symbol of humankind's ingenuity. Our vision as artists is to provide inspiring experiences by interacting with fire on an intimate level.

Virtual Tour

Walking across the open playa you see patterns of flame rhythmically pulsating upwards in the shape of a double helix. As you approach you recognize the patterns to be in the same rhythm as a heartbeat. Along with a crowd of on-lookers, one person stands in front of this twisting fiery sculpture with a stethoscope placed on her heart. You can see now that this fire helix is echoing her exact heartbeat like a flame EKG.

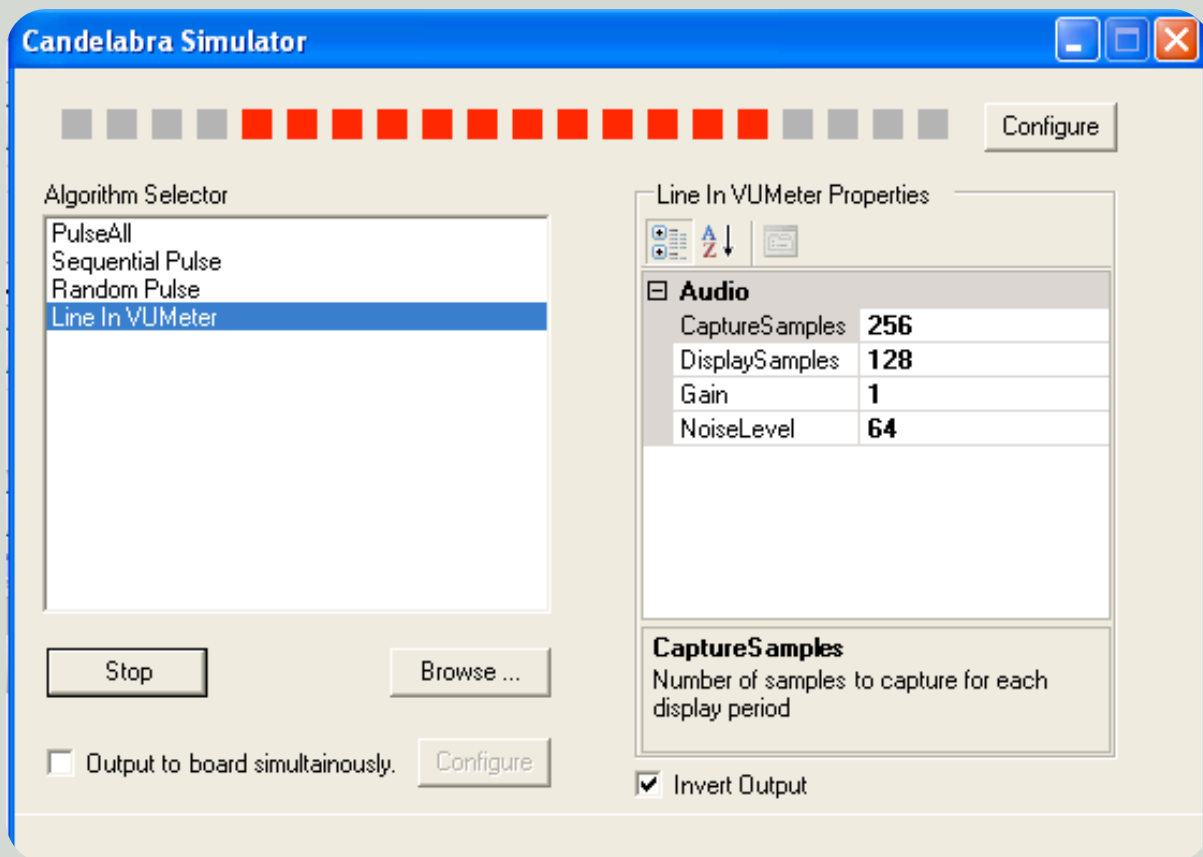
It's your turn. As you sit down in front of the sculpture, only the two flames at the base of the helix are burning. You place the stethoscope over your heart, and as your heart beats flames race up both edges of the helix. You feel the power and heat of twenty individual 3-foot-tall flames stretching upwards through the sculpture, amplifying your own physiology. It is an exhilarating and beautiful experience; your heartrate rises, quickening the fire pulses.

Operating Modes

PyroCardium displays a person's heartbeat when they pick up a stethoscope attached to the sculpture and place it on their chest. The participant sits comfortably inside the pavilion next to the flame helix at a close but safe distance from the fire. Of course, anyone is free to pick up the stethoscope and do anything they want with it. At the first few touches as the microphone inside is brushed and tapped, the sculpture will burst into tall flames. That will certainly get a person's heartrate going. And people will naturally talk into the stethoscope to see their voice displayed. Shouting and laughing may also occur. If the stethoscope is not used for a heartbeat, the microphone will pick up music played around the sculpture, creating a hotspot for art cars to stop and people to dance and play.

BURNING ARTWORK

Fire Control Software



We have developed a new fire control software platform. With this software we are able to easily write new algorithms to control PyroCardium, and we can dynamically update and adjust parameters such as input sensitivity, noise level, output gain, and update frequency. We plan to release our custom-built simulator software as Open Source so that the larger development community can use and participate in its development. The cost of this development has been about \$2,000 and has already been completed and paid.

The algorithm specific to PyroCardium averages input audio sample data to produce a set of twenty output bits per cycle. These twenty bits are sent to a Measurement Computing USB-1024LS Digital I/O board, which connects to the USB interface of the computer. From there the output pins are amplified using circuitboards we have designed and fabricated, which then connect to solenoid valves on each flame pipe on the helix.

Safety

- ☑ CO2 and Dry chemical fire extinguishers, fire blankets and burn kits within reach for any possible incidents.
- ☑ Normally-off solenoids. Software that defaults to zero output.
- ☑ Flashback valves, and all flammable gas safety guidelines followed. Gas cylinders placed away from the people and sculpture.
- ☑ Working with Jack Schroll with continued advice from PST.
- ☑ Two-person shifts will be established for all times during operation.
- ☑ Primary fire contacts with PST: Kurt Thorn and Brett Levine

COMMUNITY

Our community is dedicated to producing fire art projects. We have submitted two proposals this year, which we hope you will support. And it is with great respect and awareness that we would like to build both of these projects. We have the commitment, the know-how and the humanpower for both.

False Profit has had presence on the playa every year since 2001 as OddSee, Monkey Vs Robot, and the self-titled False Profit camp. We are a community over 150 people strong, with each camp numbering between 50 and 100 people. Our community is a strong group of friends and collaborators, dedicated to creating Burning Man artwork. We are artists, engineers, and people who fully engage with our present world.

This year, we have launched False Profit Labs, dedicated to the creation of science-inspired artwork. Our work has been shown at Burning Man, San Francisco Decompression, and Alchemy. Our collaboration consists of core members who are already meeting for workdays, solving problems of fabrication and implementing our designs.

- Kurt Thorn - Project Creator, flame effects, gas handling and electronics.
- Brett Levine - Project Lead - Software simulator, hardware interface.
- Chris Linder - Sculpture design, software development, ignitors construction.
- Dyche Mullins, Ethan Garner - Science and chemistry advisors, fire chemistry research.
- Brendan Colloran, Zachary Warnow, Jason Siegler - Mechanical design.
- Aaron Hall - Branding concepts.

SCHEDULE

Pre-Event Timeline

Component	Working dates
Circuit design	Complete
Fire control software development	Complete
3-Flame prototype testing	Complete
20-Flame prototype testing	March
Metal sculpture	April
Stethoscope interface	April
Sculpture pavilion	May

On-Playa Construction

Our team of six builders will arrive on Saturday, August 23 to begin construction. We will need a trencher from DPW for 1-2 hours to bury gas lines. We will need a SkyTrak or similar for 4-6 hours to assemble the pavilion and hang the DNA helix.

Assemble helix sculpture and pavilion pieces	1 Day
Erect pavilion and hang sculpture	6 Hours
Run gas lines	4 Hours
Run electric lines	2 Hours
Full Test	2 Hours
Install Lighting	4 Hours
Mount Signs	3 Hours
PyroCodium fully operational!	

LEAVE NO TRACE

We are very experienced at being ultra moop-sensitive as False Profit camp. This is Kurt's second Burning Man and together with False Profit camp I have learned the importance of being very appreciative our desert home and leaving it in proper condition for the next year.

We think the key to cleanup is to have appropriate storage organization, garbage and recycling storage facilities which we bring and build each year. If the things we bring have a place to be stored, it will be easier to take apart the project and leave no trace.

1. Sculpture interior cleanup.
2. Enclosure disassembly.
3. Truck loading with all materials and garbage.
4. Fine tooth comb sweep over area for any left-over contamination
5. Repair playa divots, trenches or other damage.

VIDEO DEMONSTRATION

An early demonstration of three PyroCardium flame tubes controlled by voice:

<http://www.youtube.com/watch?v=Uwo0E8o0JMA>

A 3D flyby of a model of the project:

<http://www.explodingbubbles.com/PyroCardium.mov>