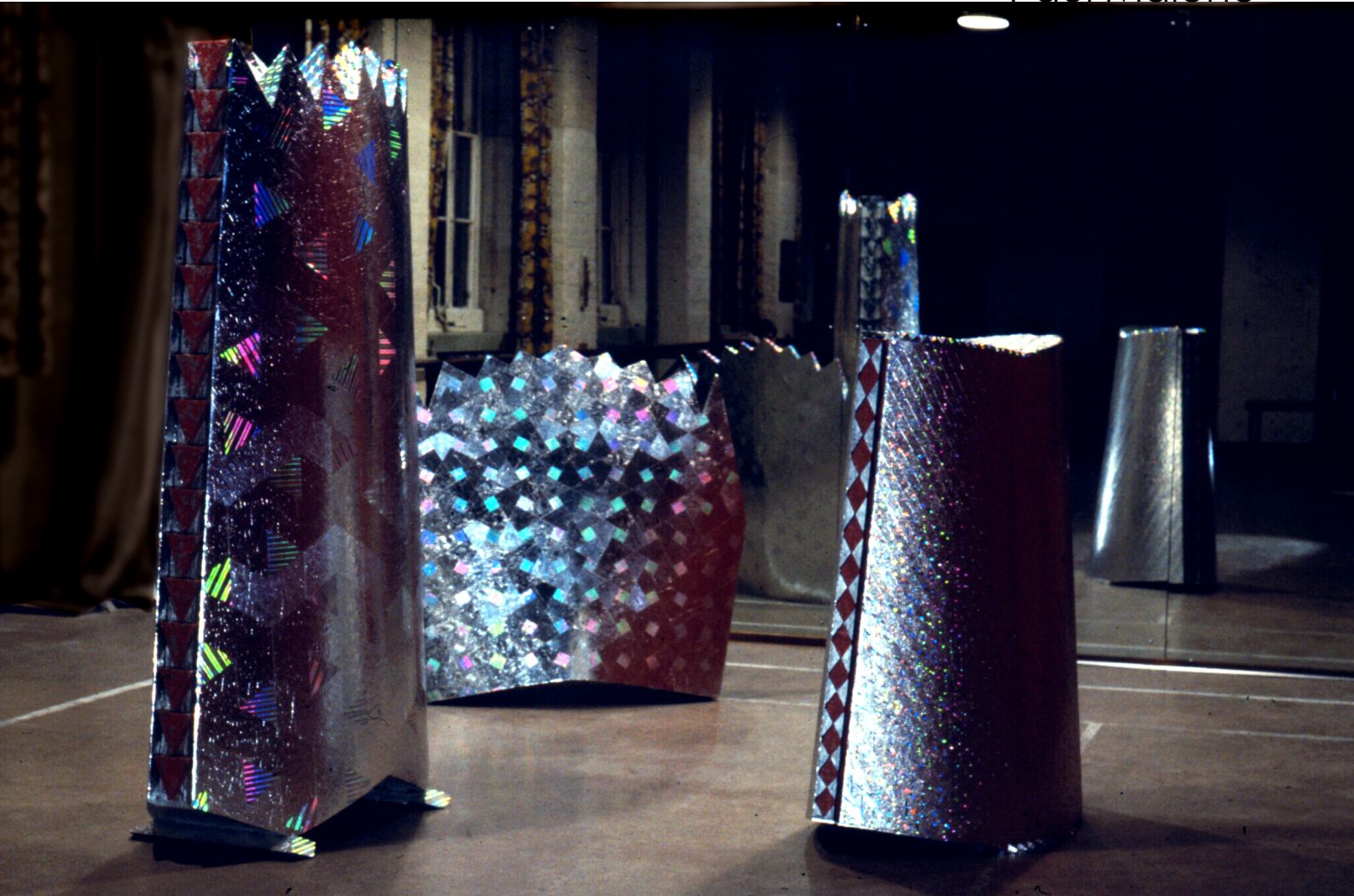


Zero Point Archive (1981 to 1984)

Paul Malone



*The Tao Tie Ensemble
Photographed in the ballet room beneath my studio*

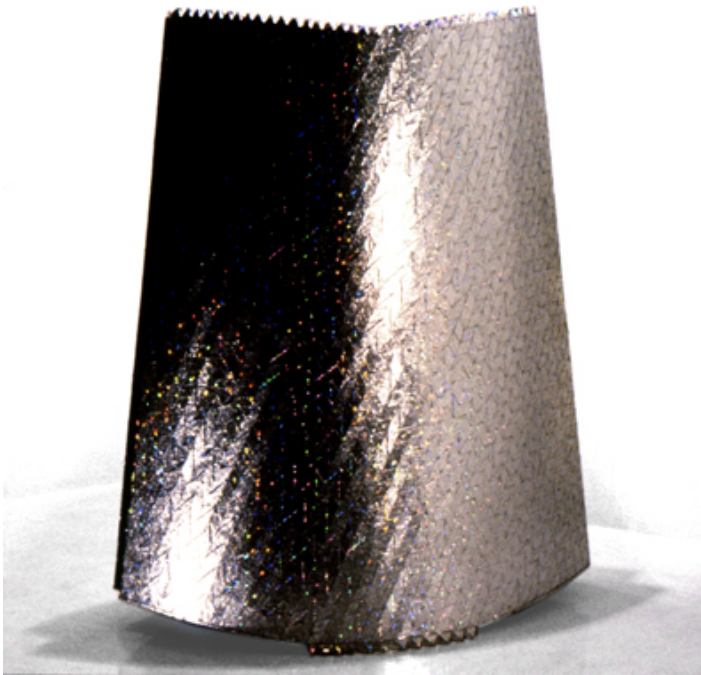
Nothing of this archive now exists. Even when it existed it didn't exist. All that remains is a set of photographic representations and a claim on narrative from which one could potentially derive an ontology.

It all started as a quantum conceit which I now consider as wholly misplaced. The temptation is to erase any evidence that I was ever deceived but one can never move on unless honest about one's delusions.

I was gifted a studio in Central London; a former science room in an old school dating from the late 1800's. It was natural that I looked around at the science philosophies within my immediate context. At that time astronomy was becoming the subject of entry-ism by the quantum mechanics (QM) fraternity. For 60 years that Field had been looking for a home wherein it could perceive itself to be relevant - but without success.

Who knows how the Big Bang theory (of the origin of the Universe) came to gain traction in the lexicon of human understanding - but it did. And, as it initially encompassed an infinitely small Universe, it beckoned to those who theorised at this scale. There were now no longer astronomers but astro-physicists. This opened the doors to the laurels of a Nobel Prize; something that, as mere astronomers, they could never previously attain.

And so these objects came to be.



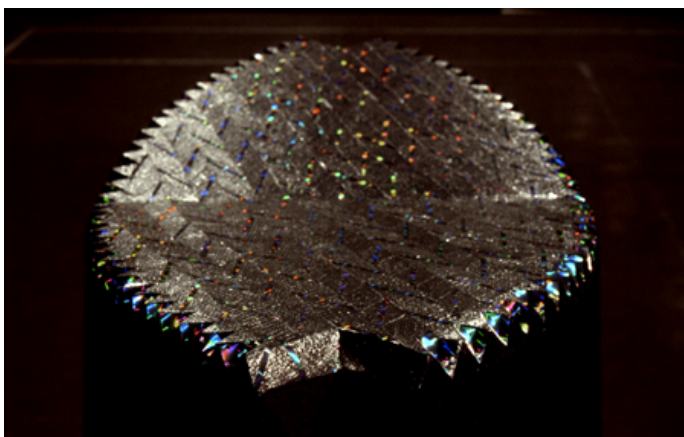
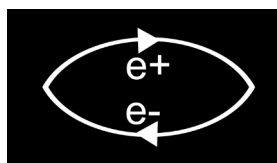
'Tao Tie 1 (1982) 150 cms tall

Showing the aluminium tiles, diffraction foil sparkles and carved wooden structural supports

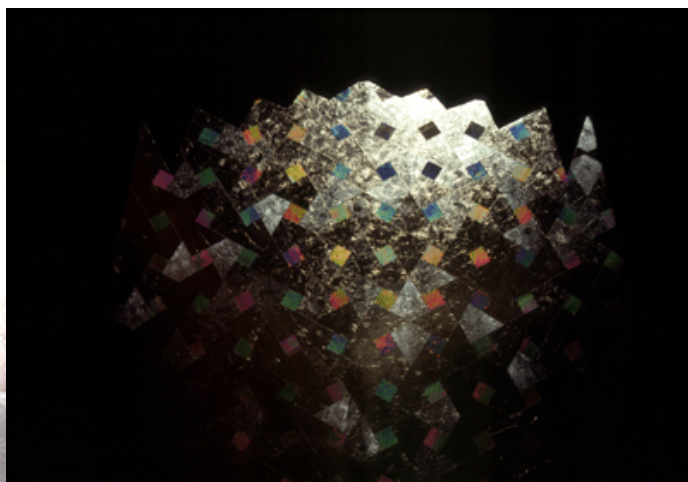
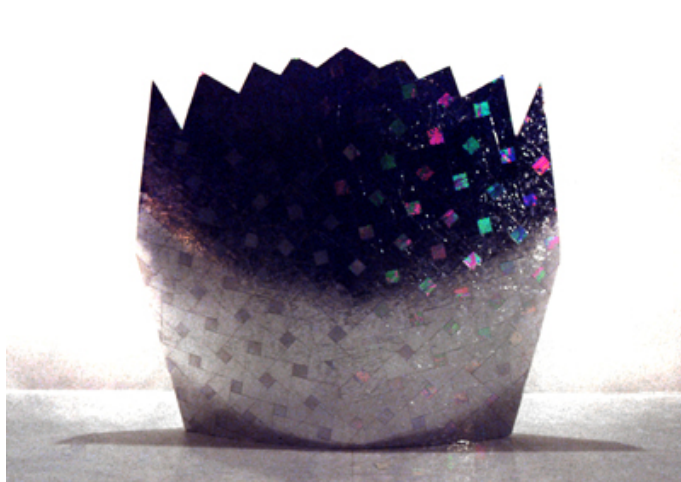
The first thing you notice is the top down cross section. This is what is called a 'vesica piscis' or fish shape. This is based on the idea of what in QM is called a virtual particle. In this instance, it (and its anti-particle) appear from, and disappear into, the vacuum.

Richard Feynman generated a series of diagrams called 'gauge diagrams' to more easily visualize these events.

*Right:
Gauge diagram of a virtual
electron-positron pair*



This is the origin of the term 'Zero Point' energy but, as you can see, it has no relation to everyday, nor indeed any, rational mechanics. It is essentially nothingness exemplified by maths. And nothing like this has ever been observed.



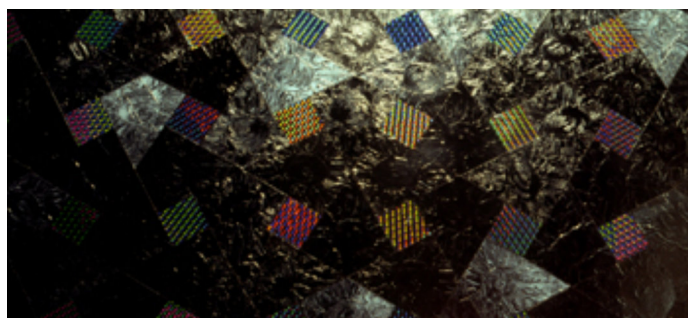
'Tao Tie 2 (1982) 150 cms tall

Showing the aluminium tiles, diffraction foil squares. The pattern is arranged in a 3/4 rhythmic arrangement.

Above Left: Rear

Above Right: Front

Right: 3/4 Pattern



Leaving that aside the next undertaking is to imagine what that particle/anti-particle existence would look like. At the time I made these artworks in the early 1980's the fashion was to engage in hologram art. This was hugely expensive at the time but luckily there were low cost options.

These sculptures were made out of plywood under tension but then covered in a mosaic of tiles made from card backed textured kitchen foil. In 'Tao Tie 1' the foil was typed in ones's and zero's to emulate the then incursion of the digital world that was taking place.

On top of these were placed thin strips of diffraction foil which flashed rainbow colours as the viewer moved around. There were 4,800 of these striped tiles and so the mass of the whole disappeared into this galaxy of sparkles. Incised in the top were chevrons that implied the core was also made of diffraction and the 'feet' were intended to imply it could just walk away if needed.

Some of the works had 'ladders' of crudely carved wood and painted with colour and silver highlights. These were derived from the opposing dragon faces of early Chinese pottery - the Tao Tie - and kept the curved plywood under tension.

All these sculptures followed the same pattern with the vesica piscis and cladding of aluminium foil and diffraction foil. The difference in the following works was that the surface structures were derived from Islamic patterns and the relief on the aluminium panels were generated by pressing against an acid etched plate and passing through a print-makers roller press. The outlines of the tiles were also included in this process. The card was coated in Cow Gum so that the relief elevation was filled.



'Tao Tie 3 (1983) 250 cms tall

Showing the aluminium tiles, diffraction foil inserts. The pattern is arranged in a hexagonal / triangular rhythmic arrangement.

I did try to make a larger work made from sections but my time at the studio came to an end. I could not store these works in my new place so they had to be disposed of.



*Waterloo Studio (1984)
Showing the first 3 Tao Ties under wraps
with Tao Tie 4 under construction*

So, the objects now no longer exist and the concept that under-plied them I no longer adhere to. They are there in a few photographs and my memory of the work I did on them. However, the larger piece did gain a new lease of life in response to an architectural competition in San Jose, California. I did not win, but this project is now also archived with the city.

Urban Confluence Silicon Valley Competition 2020

The TaoTie Building
a museum of the photon

Design of the Building

The building is intended to follow closely the look and design of the sculpture. However, practical and functional considerations may well require certain modifications.

The Crown, being an open viewing area, would need to be outlined in an open steel structure so there would be views out in all directions. The inner Atrium would likewise be an open steel and glass structure. If thought appropriate, the steel could be outlined in tiny white LEDs - similar to the palm tree avenue to the South.

Not all the triangles in the Body tessellation need to function as windows, especially as the building will be a museum with galleries. The front and rear full height windows should be sufficient to light the interior. The triangular windows need not be curved.

It is important that the Feet (blue diamonds in the plans) are allowed to reflect the sky. The building should look as though it is floating on light.


I have left the interior of the building blank (see D3) as it will need to be flexible as to layout. I envisage a double height reception area i.e. 20 ft with the other floors around 10 ft. The central core will contain two lifts that will travel from the Basement to the Atrium, two sets of emergency stairs and all the utilities. Public access stairs would be integrated into the museum interior design and also disabled ramps.

Lighting: There need not be any external lighting for the building to operate. If it thought appropriate there could be modest down lighting extending on armatures projecting from the Crown (West side only) to cast triangular pools of illumination on the ground. Although unusual in appearance I believe it can be built using standard techniques.

Considerations

Aircraft

The site is right underneath the flight path into San Jose Airport. See the orientation map and cockpit view below. The yellow line is the building's orientation



The structure would have a height less than 200 ft to accommodate this restriction. The full height windows at either end could look like a runway (aviation criteria) but with its off-set orientation, this should not be the case. Sun reflections should also not be a problem as the approach is from the South. The lifts would be polished but any mirror-reflexivity will be broken up by the embossed (mat) pattern and tessellation. There would be no up-lighting from the base or observation platform. Light from inside the building would be approximately the same as the surrounding buildings.

Disability

The building would be fully wheelchair accessible via the lifts.

Fire, Earthquake, Wind and Sun

The building will be clad in stainless steel which would be compliant with current cladding restrictions post-Grenfell Tower. Other elements of the building should conform to 'A' grade (or US equivalent) fire resistance.

According to the US Geological Survey, San Jose is in an area prone to substantial earthquakes - the SJ football team is named after this phenomenon! The overall shape of the building (tapering towards the top) should be intrinsically resistant to earthquakes but this could be augmented with damping features in the basement and the central core.

Wind tunnel tests may need to be carried out but the smooth aerofill shape should mitigate any damaging wind voices in the surrounding area. There may be some tunnelling next to the Arena.

As the building is convex there should be no Sun focussing effects.

Environmental

The building is at the far end of the Park and with access from the street for construction and visitors. As such it should have little impact on the flora and fauna in the rest of the Park - especially that around the confluence of the rivers. Likewise, as the building will only be its passively or with modest down-lighting on the East (Stadium) side it should have little impact on the river flora and avian migration. Though metallic and reflective the tiles on the cladding present a convex curved surface minimising light focussing effects. The night-time illumination of the structure on the West (Park) side would be provided by reflections of other buildings, passing cars on the freeway and aircraft coming in to land.

During the morning, the building will cast its shadow onto the Arena. At midday the shadow will be cast forward onto the N. Autumn / W. St Johns intersection. In the evening the shadow from the Arena will fall onto the Park so the building will not add significantly to overshadowing of this area.

The Observation Deck, by its nature would be unlit at night to provide views of the nightscape. The interior of the central Atrium would be modestly lit as you would find in any urban cafe. This would not be visible from the River. During the day the building would operate as a object of light but at night it would look like a section of the starry firmament (see H).

Rainwater can be drained internally from the Observation Deck. This can be stored and used for non-potable purposes.

With average summer temperatures of 27 deg C, I envisage the main problem energy-wise would be keeping the interior cool. The reflective nature of the cladding, along with insulation, should mitigate much of the solar radiation but ambient air temperature will need to be accommodated.

Cooler air from the basement could be drawn up (through rainwater containment tanks?) via the central core (the stack effect) and filtered and distributed in the interior. Some of the incandescent triangles could be interpreted as solar panels to augment the power supply for the interior and exterior lighting. The lifts would need a secure power supply. LEDs should be used throughout.

Some trees will need to be removed and these should be replaced elsewhere in the Park or as part of the landscaping works on the site. Native species.

The site is well served by freeways, streets and parking. However, if it is to be a tourist attraction there will need to be enhanced public transport links. The nearest is the LA light rail San Fernando station. Both this and the Divison station are a fair walk away through unimpressive streets, subways and lots. It would perhaps benefit the project if these route-ways were landscaped or otherwise improved. A river walk along a re-landscaped Los Gatos Creek to the site from San Fernando looks feasible and would pass by the Santa Clara and Delmas bus stop (routes 17,22,68)

The Park

The building will occupy only a small part of the Western Park Area. From the Google Streets photos it looks like the Park is heavily used by families enjoying the picnic areas and shade from the trees. The intention would be to keep as much of this facility as possible.

The Museum

A big part of the project would be the provision of education both locally and to the greater City. There are one or two museums of light around the World (i.e. Mexico City) but these are usually a subsection of a larger institution. San Jose would be unique in having a building that looked from the outside like the concepts that were on display inside. It would not just be 'light' but extended to include all the manifestations of the photon and its place in the history of science and technology.

Money

The design intention would be to facilitate the museum to become self-sustaining financially; as is the case with other museums worldwide. The cafe and the observation deck would be paid access as would special exhibitions. There would be a floor with a library and lecture rooms with the intention of linking to other education establishments in the area. It could also act as a repository of expertise on this topic that could act as a revenue stream deriving from the surrounding technology firms. In this way, what is at first sight a modest project can have a far wider influence than it would at first appear. As this design has a Chinese cultural antecedent it may well appeal to that community in terms of approaches for funding.

A link between the Past and the Future

The old Light Tower was initiated in order to demonstrate the exciting possibilities of the new Electric Age. Although my design deviates from the Eiffel Tower aesthetic of the original, I hope it will encapsulate the inspiration those designers must have felt for the future when theirs was proposed. As in the early 1500s and again in their late 19th Century, we are once more on the brink of a new 'Copernican Revolution'. This project has the potential to revisit that point of intersection, a crossroads where we can reach a new understanding of the true nature of the photonic world.

The Tao Tie Building, San Jose, California (2020)

Design for a light tower and museum of the photon

Paul Malone ©2022
www.paulmalone.co.uk