Four Layered Spherical Display Structure:
Panoramic Display of Lumière's Photostereosynthesis

GARNET HERTZ: DESIGN PROPOSAL

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Abstract:

Proposal for building of a custom four-layered transparent sphere for the display of spherical "deep" 3D images in the style of Louis Lumière's 1920s-era layered photographic technology, "photostereosynthesis".

Project URL:

<http://www.conceptlab.com/photostereosynthesis>

Goals & Aims of Research

This research proposal focuses on the construction of a custom display structure/dome to be shown in museums and art galleries.

As an overview, this document:

- provides a historical context for this display structure
- proposes a mock-up diagram for the proposed structure, and
- explains the general technical requirements of the proposed structure.

Detailed Description of Activity - Historical Context

Louis and Auguste Lumière are best known as inventors of the cinematographic projector and the first publicly screened film: *La Sortie de l'Usine Lumière à Lyon* (1895). Film historians widely consider the Lumière brothers to be the inventors of contemporary cinema.

Through his life, Louis Lumière continued to investigate different imaging technologies, and in the early 1900s invented photostereosynthesis: a process in which a series of still photographs are shot at extremely small depths of field (wide open aperture / shallow focus) at incrementally increasing focal lengths (20cm, 22cm, 24cm, 26cm, 28cm, for example).

Each individual exposure is printed as a transparent positive on glass and stacked to produce a composite 3D photo with the subject entombed in a translucent backlit image several centimeters thick.

Traditionally, this photographic technology was only used for portraiture, and used a large format camera built by Lumière that mechanically narrowed the image's depth of focus. Images were difficult to produce and print, demanded that the model sit still for a long period of time between camera adjustments/exposures, and required a custom camera. Although photostereosynthesis was an aesthetically beautiful imaging technology, it failed to succeeded commercially. Only twelve examples of photostereosynthesis have survived today, and the custom camera has been destroyed.

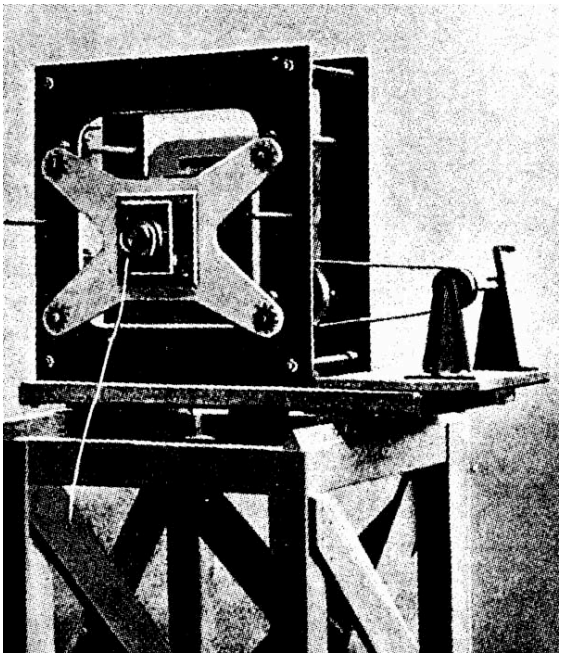


Figure 2. Photograph of the custom camera used in Photostereosynthesis, in Raymond Lecuyer, *Histoire de la Photographie*, Baschet et Cie, Prais, 1945, p. 289.

Figure 1. Louis Lumière, *Portraits of Auguste Lumière, stages in 'photostéréosynthese'*, c. 1920
Gelatin silver prints; each print about 24 x 18cm.

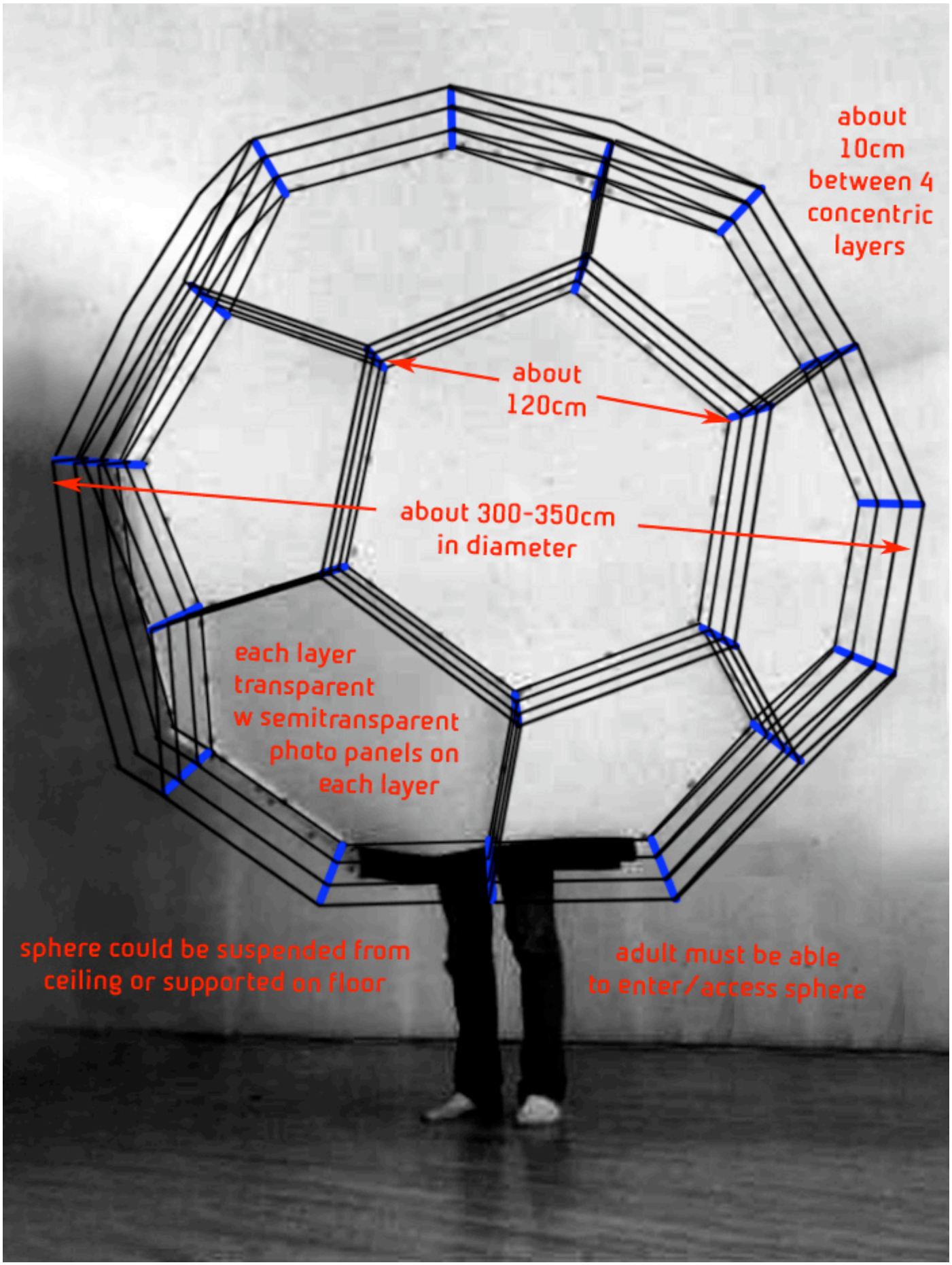
Detailed Description of Structure

A separate research project is currently being conducted to build a custom digital SLR camera controller to acquire spherical panoramic multi-layered digital photographs in the style of Lumière's photostereosynthesis. For more information on this project, see http://www.conceptlab.com/photostereosynthesis/

The general idea for this structure is to re-create a historical 3D panoramic display technology to be experienced / viewed by museum-goers and the general public. It is proposed that the display structure have four transparent concentric spheres, approximately 280cm, 300cm, 320cm and 340cm in diameter.

Requirements of Display Structure

1. The sphere must have at least four (4) transparent layers.
2. The sphere should be about 3 meters in diameter. At least 10cm of space should exist between each sphere layer. Proposed sphere diameters might be approximately 280cm, 300cm, 320cm and 340cm.
3. Each panel needs to have a photographic panel mounted on it. This is proposed to be an inkjet-printed transparency film adhered to (or sandwiched between) clear plexiglass.
4. The sphere must be able to be completely assembled and disassembled in under twelve hours by one person.
5. A grown adult must be able to stand inside the sphere. From the viewer's perspective, they will view a four-layered "deep" panoramic photograph that will surround their bodies.
6. The dome does not need to be a geodesic-style dome, although ample information currently exists (online, books, etc.) on building this style of structure. See Appendix A at the end of this document for a selection of these resources
7. The sphere could be supported by being suspended from a ceiling or from the floor.
8. The sphere walls should be strong enough to handle a moderate amount of abuse: although the dome will be displayed in a museum setting with security personnel, etc. the sphere shouldn't break if a viewer loses their balance and falls/leans on the sphere.
9. The sphere is proposed to be displayed for several months at a time. Therefore, the sphere walls or frame should not sag, bend, discolor, etc.


about
10cm
between 4
concentric
layers
about
120cm
about 300-350cm
in diameter
each layer
transparent
w semitransparent
photo panels on
each layer
sphere could be suspended from
ceiling or supported on floor
adult must be able
to enter/access sphere

This proposal is somewhat incomplete. For more information, please contact Garnet Hertz at garnethertz@gmail.com.

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Appendix A.
Support Material & Links

Support material for this project is provided online, and is viewable through any standard web browser. Please see the URLs below:

<http://www.desertdomes.com/tips.html>
Tips on building a geodesic dome out of steel conduit tubing by Tara Landry of Desert Domes.

<http://www.desertdomes.com/domecalc.html>
Geodesic dome calculator by Tara Landry of Desert Domes.

<http://www.conceptlab.com/photostereosyntheis>
Preliminary documentation of this research project, including the proposed custom camera hardware/ software for the acquisition of photostereosynthesis images.

<http://www.conceptlab.com>
Homepage of Garnet Hertz, featuring recent updates and archives of completed projects.

<http://www.conceptlab.com/garnethertz>
CV of Garnet Hertz