"Jerry Pethick: The Missing History of the Sand Isolation Table"

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Abstract. Jerry Pethick (1935-2003) was one of the first artists to experiment with holography in the mid 1960's. He was a close friend and collaborator with Lloyd Cross of Multiplex fame. Pethick and Cross started the School of Holography in San Francisco California on Shotwell Street. Pethick is known for building the first sand optics isolation table and writing the first holography handbook describing how to build such a system and create holograms with it. This paper offers some of the missing history of his accomplishments.

1. Introduction

Colourful would be one way to describe the people who were there at the creative forefront of holography in the 60's & 70's. One such person was Canadian sculptor, Jerry Pethick, an Associate of the Royal College of Art in London & one of the first 2 or 3 artists to explore holography. Sean F. Johnston's, Holographic Visions A History of New Science has provided the field of holography interesting and detailed accounts of the early days of holography as science, as an art form and an industry. Included are stories about Jerry Pethicks contribution. [1]

Many of the details in this paper & accompanying poster attempt to supply some missing history as shared with me by Jerry's widow and wife of many decades, Margaret Pethick. I have her permission to describe what she shared. This photo (Fig 1) shows Margaret in her home on Hornby Island.

Figure 1
Margaret Pethick at her home on Hornby Island, BC Canada

Jerry's interest in holography evolved from and coincided with his interest in creating art utilizing plastics and integral photography. Jerry went on to become an internationally known artist working with lens arrays and other optical materials after transitioning on from holography. His time in the field was brief but his contribution significant as described below.

2. Jerry Pethick Time Line (quoted where noted by Margaret Pethick)
Jerry Pethick met Dennis Gabor in London around 1967, at Imperial College after seeing Gabor on BBC demonstrating Holography. Jerry decided he "had to find out how to make holograms". It was Gabor who advised Jerry to go to Ann Arbor where more research and work in Holography was
happening. Jerry also met holographic artist Margaret Benyon in London around this time and they talked often in these early days.

It was in Ann Arbor Michigan where he met & began his close collaboration with one of the great folk hero's of holography, Lloyd Cross of Multiplex fame. Lloyd Cross was working in Ann Arbor, doing advanced work in optics and holography. Jerry and Lloyd were friends and collaborators for many years. Jerry and Lloyd "hit it off immediately" according to Margaret.

![Jerry Pethick and Lloyd Cross, date and photographer unknown. Collection of Margaret Pethick](image)

Jerry returned to London and Lloyd then brought Jerry his first laser, most likely a Krypton or Ruby Pulse to the studio where Jerry was setting up his sand-based, car tire tube isolation system. The studio was located over the Tube line in London and there were "horrific vibrations". Consequently, Jerry had to work at night after the tubes stopped running and before they started again. Such recording schedule considerations were emblematic of the spirit that would be the signature behaviour of future holographers.

Jerry relocated to Ann Arbor in 1968 to work with Lloyd and it was there that a group of artists and scientists set up Editions Inc. to make holograms using the sand-based system. In 1969 they exhibited holograms at Cranbrook Academy in Detroit, and in 1970, *N Dimensional Space* at Finch College Museum in New York.

3. The Sand Table
There are at least two accounts of the invention of the sand isolation optics table as described in Johnston's book on pages 264 & 265. [1] There is some confusion about the exact story but there is no debate about who was there and did the inventing. The two, young holographers, Jerry Pethick and Lloyd Cross are credited in various accounts with figuring out and then building the first such systems at Jerry's London studio and at Editions, Inc in Ann Arbor Michigan around 1969.
The whole philosophy behind the sand isolation table was an accessible approach that liberated holography from the confines of well funded, off limits labs in research facilities and universities. Jerry would later write in a down to earth way about building the sand system.

"A garage or basement concrete floor is best, but anyplace away from people and traffic such as in the country is an ideal location for holographic work. Once the sand box and inner tubes have been set up, the optical components are mounted on tubes and stuck in the sand. This allows for flexibility and quick adjustments, with immediate stability as soon as the tubes are released, since the bottom portion of the tubes become filled with sand, thus lowering their centre of gravity." [2]

Figure 3  Jerry Pethick illustration of his Sand table isolation system

Figure 4  Jerry Pethick illustration of his Sand table optical components

The approach taken & the simple materials combined in clever ways was the basis for the garage and basement holography phenomena that survives today. Colleges and future schools of holography adapted this approach for its simplicity, portability (well, sort of) and affordability as shown in Figure 5 below.
Following the interest generated at the Cranbrook Academy and Finch College exhibitions, Jerry and Lloyd decided to start a school of holography in New York. Margaret Southcomb, Pethick's future wife moved from the UK to NY to join him. Margaret describes NY as too difficult and expensive to rent holographic space so the group looked to move on. During this time, Jerry had been doing some block teaching (sculpture) at the San Francisco Art Institute and was totally enamoured with S.F. So, in October 1970 “we all” moved from New York to San Francisco.

4. San Francisco, Project One & The School of Holography
Margaret and Jerry had been told about the former American Can factory, now called "Project One". It was just off Market Street at 9th and Howard. This square block former factory was now taken over by a group of people, trying to create an "alternative Urban society (this was late 60s!)") according to Margaret. In 1970 they moved into the basement which they rented by the square foot. They were supplied with studs and dry wall to create the space. Lloyd arrived several months later & this was the space they ultimately transformed into the first School of Holography in San Francisco.

Obtaining some type of credential acknowledgement from SF State and possibly Antioch they set up the first teaching session at the school. Now, thanks to their efforts, “there were eight more holographers in the world”. Of note, is that holographic educator, author and artist Fred Unterseher was a student in this first class.

5. Holograms: How Do You Make These Things?
Jerry Pethick was the author of the first published book describing how to build a sand isolation optics table and how to make holograms with such a system. The little book with hand drawn illustrations titled "On Holography and A Way to make Holograms” was published in 1971 by Belltower Enterprises and was used for teaching at the School of Holography. [2]

Excerpts from this book defined a language that encouraged access by anyone to this rather obscure and esoteric science/art. The language he used, although technically correct, set the tone for the
intimidation-busting that was necessary for holography to open up to a wide circle of practitioners, as evidenced by the following paragraph.

"Holography is simple. Anyone with interest, basic information and minimum equipment can make a hologram. Maeterlinck said of man's use of tools (the telescope for example) that the discovery of a new star or phenomenon is not named after the tool, but after the man who discovered it. Technology has a host of new tools for those who are interested, but it will take time and talented people to realize their intrinsic value. The potential of the future is now, given imagination and the will to encounter the unknown." [2]

In these early writings by Pethick, the experimentalist view emerged that there were no wrong ways to make a hologram as long as something played back & it was even OK to break the rules. For instance you could create colour compositions resulting from the "spectral smear" from using a non-coherent reconstruction source to illuminate a laser transmission hologram. And this was written in 1971!

The group continued at Project One for a couple of years and then move the school to Shotwell Street where Lloyd set up Multiplex. Shotwell became synonymous with the San Francisco School in late 1970's. More holographers than can be credited here studied at this school and many became excellent artists and leaders in the industry that was emerging at that time.

Figure 7
Shotwell Street, San Francisco School of Holography Poster
Collection of Margaret Pethick

6. Jerry Moves On
Jerry gradually moved away from holography after 1973 as he became more involved with Fly's Eye lens and integral photography, experimenting with sculptural spatial dimension and other optical materials he could fit in with the sculptural element of his work.

Margaret describes the new direction of Jerry's art as "... array pieces, multiple images taken with an instamatic camera, each from a slightly different point of view, which when viewed through an equal number of fresnel lenses at their focal length, reconstruct into one large image with dimension." At this time Jerry also sourced plastic fresnel lenses and off the shelf diffraction gratings such as Spectrafoil and used the spectral colour for pieces such as his enameled stove top works and other such found objects easily obtainable at local dumps. It's not possible in this brief history to do justice to Jerry's full life as an artist. For further study of his non-holographic art works please visit the catrionajeffries.com Gallery web site.
7. Annette Hurtig of the Kamloops Art Gallery wrote of Jerry Pethick:

"Jerry Pethick's innovations in aesthetics and visual imaging systems are important because they affect paradigm shifts that disrupt the visual status quo. Avoiding recourse to spectacle by using materials that are at hand, recycled, or readily and inexpensively available, Jerry Pethick intentionally maintains a modest economy of production. His work acknowledges and responds to, but also critiques, the spectacular and spectral world of commodity culture and consumerism. Favouring an enlivened, unmediated visual and cognitive experience that privileges and at the same time challenges the embodied viewer, Jerry Pethick makes art that provides (an unusual) visceral pleasure derived from visual effects that invite meandering, non-linear perception." [4]

Jerry Pethick passed away in 2003.

Figure 8  Photo of Jerry Pethick on Hornby Island
photographer unknown, collection of Margaret Pethick
8. Author's Note:

I was fortunate to meet Jerry Pethick. He was living on Hornby Island, I was living on Bowen Island and he was exhibiting his stove top series at a gallery on Granville Island. Jerry Pethick passed away in 2003. For my show of holograms and metal diffractive pieces, "Holographic Installations" in 2003, I created a metal and diffraction installation piece title "Flight of Light" (detail Fig 9) in homage to this interesting man who contributed so much. The 2007 version. "Flight of Life" (Fig 10) is now in the permanent collection of the Hornby Island Art Council.

Acknowledgement:

It was in 2007 that I met Margaret on Hornby Island. She graciously shared stories of Jerry's life in Holography and showed me Jerry's studio, posters, art works and even some very, very early holograms.

References

[1] Johnston, Sean F. 2006 Holographic Visions A History of New Science Oxford University Press

[2] Pethick, Jerry 1971 On Holography and A Way to Make Holograms Belltower Enterprises Burlington, Ontario Canada

[3] Schulz, Bernd 1994 Katalog Jerry Pethick Notion of Nothing Stadtgalerie Saarbrucken Kryger Druck+Verlag GmbH Dillingen/Saar

[4] Hurtig, Annette 2003 Kamloops Art Gallery, Kamloops BC Canada